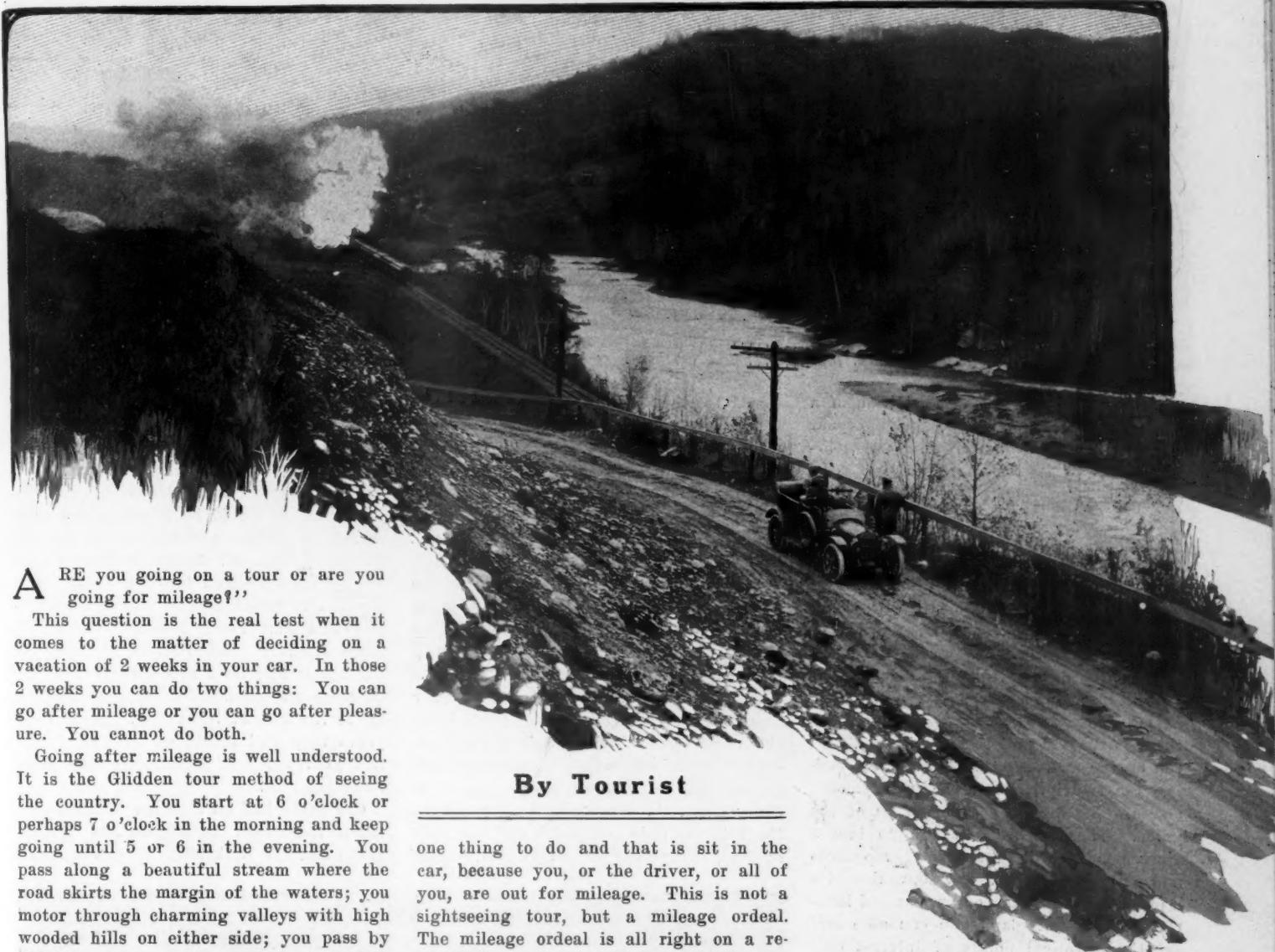


MOTOR AGE

Touring for Pleasure, Not Mileage



ARE you going on a tour or are you going for mileage?"

This question is the real test when it comes to the matter of deciding on a vacation of 2 weeks in your car. In those 2 weeks you can do two things: You can go after mileage or you can go after pleasure. You cannot do both.

Going after mileage is well understood. It is the Glidden tour method of seeing the country. You start at 6 o'clock or perhaps 7 o'clock in the morning and keep going until 5 or 6 in the evening. You pass along a beautiful stream where the road skirts the margin of the waters; you motor through charming valleys with high wooded hills on either side; you pass by old monuments on the roadside; your trip lies through Indian reservations; but you pass all by, you are out after mileage, not sightseeing.

It would be a capital offense to suggest stopping to get out and read the inscription on the monument; to make a halt in the Indian reservation to ask the name of the tribe would be an equally dangerous crime; to slow up long enough to take a photograph in an old historic valley would not be allowable; in short, there is only

By Tourist

one thing to do and that is sit in the car, because you, or the driver, or all of you, are out for mileage. This is not a sightseeing tour, but a mileage ordeal. The mileage ordeal is all right on a reliability run where makers are out to test cars, but this is a family tour, a 2 weeks' vacation, and still the bugbear mileage is the czar of the trip.

Touring for Pleasure

The second way is to tour for pleasure. Pleasure touring is in opposition to mileage touring. Four of us went on a pleasure tour through New England last October. In 10 days we traveled but 1,042 miles. Many people laughed at us when we told how far we had gone. Some de-

A typical road scene along the Winooski river on the run from Montpelier to Burlington

clared with pride that they had traveled over 1,000 miles in the same territory in 5 days and wondered what we were doing to go such a short distance in 10 days. The answer was simple: We were after a holiday; it was a pleasure trip and not a mileage nightmare.

When you go after pleasure on a motor tour you can make it a genuine holiday.



Along the Ausable River in Wilmington Notch between Upper Jay and Lake Placid. The river bed is in places masses of huge rocks over which the river tumbles. White birch trees, apparently for your benefit, line the road and river bank

The best definition of a holiday is getting your mind off your work; being able to go from morning to night without even thinking that such a place as an office exists; and being able to go from Monday morning until the following Sunday night without once being disturbed with a remembrance of a business transaction, or having a solitary shadow of work flit across your memory. On a pleasure tour of this kind you never hurry. When you pass a famous battlefield like Gettysburg there is time to pull to the roadside, stop the engine and spend an hour or so reading the inscriptions on the many monuments and listening to the stories of the guide. There is time enough to buy a picture post card, take a few snap shots and perhaps pick up a few souvenirs. On a pleasure tour when you pass an old landmark in New England you can stop and get the historical points of interest connected therewith and there may be time to purchase one of the many small booklets gotten out by the local historical societies on the surrounding points of interest.

On a pleasure tour if you happen to be making a trip through southern Arkansas, or through a rice field of that state, you have a moment, at least, to slow up and get a little information first hand regarding the industry and why it hap-

pened to start there and what is the real extent of it. If traveling through Tennessee there is time to stop in front of the many darky homes and get some photographs which cannot be purchased any place. So it is all through the different states, you have time to pause and learn.

Trip Taken in October

We arranged our trip last fall for the second half of October in order to enjoy a genuine holiday. At that time of the year the big rush of visitors at the summer hotels throughout New England is over; the mountain roads are practically deserted; and last, but by no means least, the mountains, hillsides and valleys are decked in the autumn glory; the multitude shades of the rainbow are equalled on every slope, the mountains have taken on the brilliant reds and purples of the fall; in fact, everything in nature has donned

its gayest robes, apparently for the sole benefit of the motorist.

Everyone said it was foolish to think of going from New York to the White mountains during the last 10 days of October. The weather would be freezing, the trees would be leafless and the entire country deserted, with all hotels closed. Fortunately there seemed to be a great many others like ourselves who wanted a holiday and who were not out after mileage, because the late October trade at all of the big hotels had been so heavy that a few of them were compelled to keep running up to the first of November. In previous years they had closed on October 1, but last year many of them were half filled on October 15.

Our party had all seen the White mountains, the Green mountains, the Adirondacks and the Berkshires under the magic



This is an example of the kind of roads found in New England—smooth, wide and always well kept



A bird's-eye view of the Connecticut river from the heights between Brattleboro and Bellows Falls. The road winds along the cliffs, and the broad river, almost resembling a lake in places, winds through the valley

influence of the June sun; they had seen them in July, but never after the first frost of autumn had with its master hand swept the artist's brush over hillside and dale. The change was worth waiting for and those who have not seen the foothills of the White mountains, the Green and the Adirondacks in autumn cannot understand the myriad beauties of these far-famed eastern hills. October is the best month to see them and the best date is from October 10 to 25.

The trip outlined was arranged so as to get as much mountain traveling as possible and to avoid all large cities. It was decided to start from New York and go to the White mountains by way of the Berkshires and then return by way of the Green mountains, Lake Champlain and the Adirondacks. In this way the coast trip up the ocean beach from New Haven,

Conn., to Portland, Me., was avoided and Albany was the only large place at which a night or noon stop had to be made.

The Route Itinerary

The route itinerary was briefly as follows: First day: New York to Poughkeepsie, Amenia and Great Barrington in the heart of the Berkshire country.

Second day: Great Barrington through Lenox to Pittsfield and thence over the Jacob's Ladder route to Westfield.

Third day: Up the Connecticut river valley to Hanover, the seat of Dartmouth university, passing through Northampton, Greenfield, Brattleboro, Bellows Falls and White River Junction.

Fourth day: Hanover through Wells River, Littleton and Bethlehem to Bretton Woods, with detours through Crawford's Notch and other places.

Fifth day: Bretton Woods through the

White mountains, Twin Mountain House, Jefferson, Lancaster, Groveton, Lancaster, Canenburg, Concord, St. Johnsbury and Montpelier for the night stop.

Sixth day: Montpelier to Burlington by way of the Winooski valley, through Middlesex, Waterbury, Bolton and Richmond Center, and from Burlington to Cambridge in the Green mountains.

Seventh day: Cambridge back to Burlington, thence across Lake Champlain to Westport, to Elizabethtown at the foot-hills of the Adirondacks.

Eighth day: Elizabethtown, looping through the Adirondacks by way of Keene, Upper Jay, Lake Placid and Cascade lakes back to Elizabethtown.

Ninth day: Elizabethtown to Albany, N. Y., by way of Schroon lake, Chestertown, Glens Falls, Saratoga and Schenectady.

Tenth day: Albany to New York by the Poughkeepsie route.

With the exception of the tenth day this entire route can be looked upon as a pleasure jaunt. It offers good hotel accommodations the entire distance, the majority of the stops being made at what might be called summer hotels, with the exception of Albany, Pittsfield and Montpelier. The roads over the entire route were reasonably good for late in October, with the exception of stretches in Vermont between Canenburg and Montpelier.



New Englanders are very proud of their bridges which always are substantially built

The big point in any tour made late in October in northern New England is the weather. Some days it rained, there were hail storms and there was one snow storm. But they were all of short duration and being well prepared for them there was not any more discomfort than during an ordinary rain storm in July or August. It means a call to sweaters, to overcoats and rain coats, but with these and three or four pairs of good motor gloves there is not any uncomfortable condition. On the eighth day when going to Lake Placid there was a heavy snow storm. It lasted half an hour, the ground was white and we were all covered with snow, but a hot lunch at the hotel soon dispelled the last remembrance of the storm. On the trip through the mountains from the lake to Elizabethtown we were amply repaid

for weathering the gale, because the miles of pine forest laden with the white snow, the famous Adirondack sunset and the mountain hillsides with trees covered with the white mantle, all of which are sights denied the tourist who selects the summer or early fall months to do his traveling in a motor car.

Beauties of the Trip

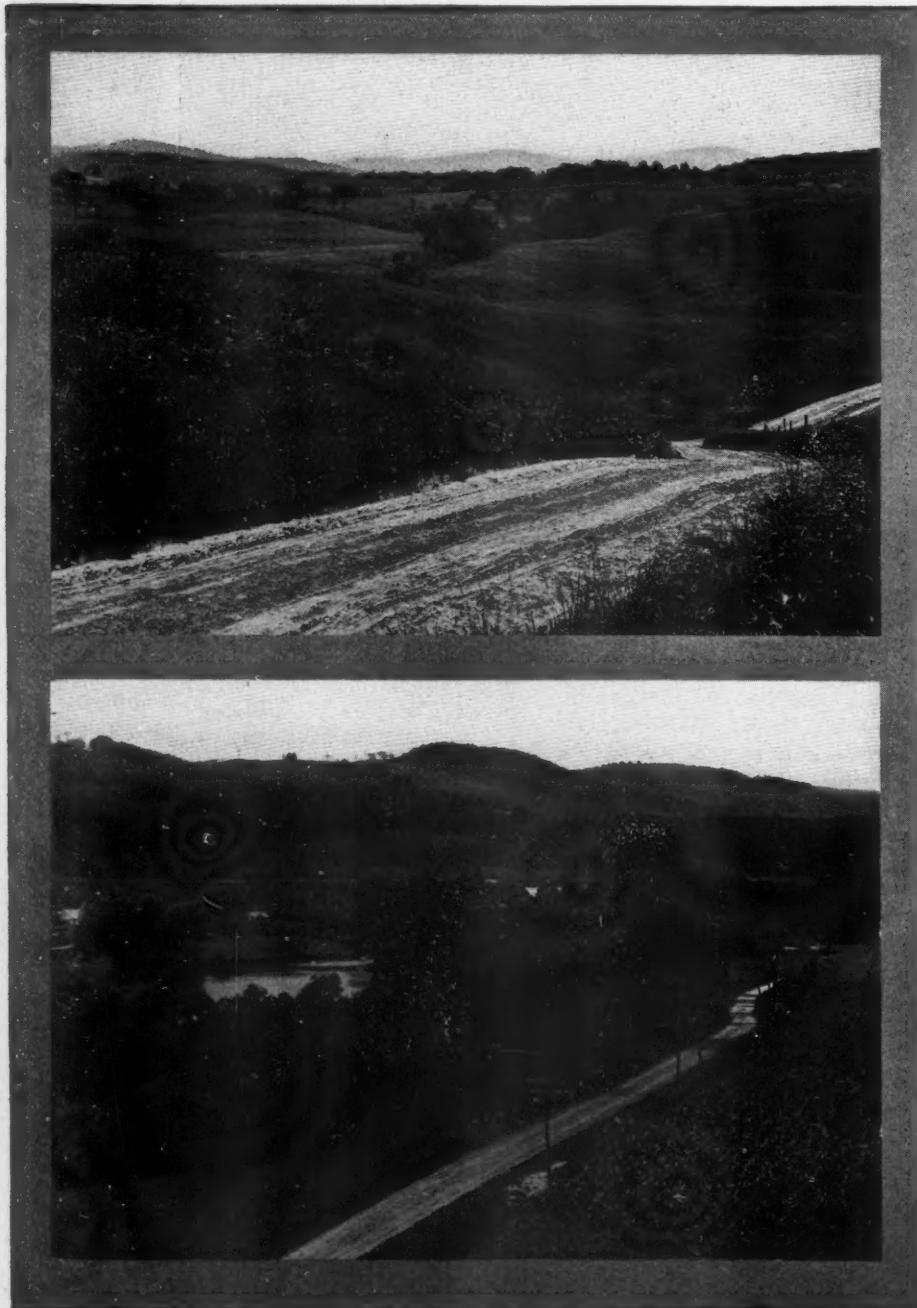
To enumerate the many beauties of a trip of this nature in a short article would be impossible; it would require a volume. A few points stand out with special significance. It is difficult to find a better touring section than up the valley of the Connecticut river from West Springfield to Wells river, where you turn off to the right to go to Bretton Woods. Leaving West Springfield you are at once going up the right bank of the river. Before reach-

ing Chicopee Falls the road is cut into the sides of the hills with nothing but a fence between it and the river and with the hills well wooded. The opposite river bank is lined with summer homes and holiday cottages. You leave the river before reaching Greenfield and do not join it until Brattleboro, one of the famous beauty spots of southern Vermont. Not far distant is the former home of Rudyard Kipling and the ascent of Wantastiquet mountain is well worth taking for the view afforded. The prettiest views of the river are obtained between Brattleboro and Bellows Falls. The road winds along the cliffs several hundred feet above the river, which coils gracefully through the valley like an enormous band of silvery, in sharp contrast with the varied hues of the forests on the mountain slopes. By the time Bradford is reached the snow-capped tops of some peaks on the Presidential range can be seen, miles off to the right, the newly fallen snow of October resting only on the higher peaks—a sight to make even the prosaic person enthusiastic.

Beauties of the Tour

The Connecticut is crossed at Wells river and Woodville and the road follows the course of the Ammonoosuc. Approaching Littleton the first view of Mount Washington was had. The road wound around a corner of the hills and suddenly the snow-covered peak, the highest east of the Rocky mountains, loomed into view. It stood out clear as crystal against the cloudless October sky. The peak was as clearly visible as the sides; not a cloudlet marred the scene. Further on at Bethlehem a still better view of the Presidential range was obtained. The trip was worth making if for nothing else but that view of Mount Washington. From Bethlehem we looked over fields alive with cattle and sheep feeding on the green grass to the midst of winter on the mountain. The woods were burning with red along the roadside, which contrasted with the spotless white of the snow.

To those who have not spent some time in the Adirondack mountains on the west shore of Lake Champlain there is much in store. Elizabethtown is the gateway to the mountains from the east. From Burlington you can ship the car across the lake to Westport, Essex, Port Kent, Plattsburg or other points. From any of these Elizabethtown is accessible, and can be made the night stop for many detours or loops through the mountains. A favorite circuit is to Keene, Upper Jay and thence through the Wilmington notch to Lake Placid. From Lake Placid a different route by way of Cascade lakes is taken to Keene and the out road retraced to Elizabethtown. The trip through Wilmington notch is well worth taking. The Ausable river is followed for miles of its wild and turbulent career. The road is at the water's edge, with the high, rocky peaks towering hundreds of feet at either side. The only habitations are hunters' lodges,



The upper illustration shows a road near Sheldon that could be improved by straightening lines. The lower one shows a fine stretch of road through Sharon, Vt., in the White river valley.

one of the prettiest seen being at High falls, where the river plunges down a succession of gorges between precipitous rocky walls in some places 100 feet high. The intrepid hunter has spanned the stream with rustic bridges and built along the vertical cliffs over the roaring waters a wood sidewalk from which the best view of the falls can be had.

The river from Lake Placid to Keene by Cascade lakes is one of the steepest descents in that section of the country, the hills being so steep in places that the road is boarded in order to prevent accidents.

Over the Mountains

The mountain trip from Elizabethtown to Schroon lake takes the tourist across some of the wildest parts of the mountains. In October the roads are good with the exception of some sand as the lake is approached. Through this territory deer hunting is indulged in and every few miles a hunter is met with a victim of the chase lashed across the back of the buggy or cart. Once Schroon lake is reached the mountain road is left behind, and in the twinkling of an eye the road becomes one of the now famous New York state highways, which is as good a roadway as can be found in any of the parks of our big cities, and which is followed south through the Lake George country to Albany.

Preparation is one of the big things in any pleasure tour. The car must be prepared for the trip and this preparation should be done well in advance of the start. Once a tour is started it is very difficult to get some tool, an extra repair part or a simple accessory. Many cases are on record where it was impossible to get some small parts even in a big touring section like New England.

It is almost impossible to say just what preparations should be made. To begin with the car: It should be well overhauled. Front wheels should be taken off to see if there is enough lubricant in the bearings. All grease cups over the entire car should be emptied and filled with fresh grease. The leather cases on the universal joints should be packed with grease, and see to it that there is enough in the gearbox and differential. The crankcase should be drained and fresh supply of oil put in. It is a good precaution to clean the spark plugs and to clean the radiator by flushing it from a hydrant.

Looking After the Car

Before starting see that all parts of the car are tight and free from rattle. Try all of the fender nuts. We have seen a fender shake off before a tour was 50 miles under way. A careful examination of the car will avoid this. Try all of the spring clip nuts, because a loose clip is one of the quickest routes to broken leaves in the spring. See that the windshield is tight, if not it will be rattling before noon of the first trip. The writer has ridden for miles with one hand on the wind shield trying to keep it quiet. This inspection expedition can be carried a good deal fur-

ther so as to embrace shock absorbers, running boards, battery boxes, trunk racks, door fasteners and lamps. A loose lamp is a great source of trouble.

But only one part of the preparatory work is completed when the car has been inspected in this way. Next go to the tools and small repair parts. First of all see that you have some spare inner tubes. If going on a tour of a week have at least six extra inner tubes and see that they are the right size. Many cases are on record where the inner tubes have been 34-inch ones when 36-inch sizes were needed. Look over the sizes yourself. Then pack them away carefully. Do not roll each one up loosely and tie a string around it and then pack it in the tool box with the tire chains, spare parts and some oil cans. If the oil gets on the tubes their ruin is certain.

Their ruin is equally certain if they come in contact with the sharp points of some tools. Each tube should be carefully packed in a pasteboard box and all put snugly away in some convenient place where they are protected from the above agents and also from moisture.

See to it before you start out that you have a good tire pump and a good jack. Nothing can be more distracting than to discover that the pump will not work when you are repairing a puncture in the country. A poor jack is equally distracting. Many tourists making long trips take two pumps, one for emergencies. It is quite serious to have a deflated tire and not a pump to inflate it within 10 or more miles.

Next in importance to pumps and jacks are good tools. Examine the tool kit thor-

(Continued on page 29)



Along the Ausable river near Lake Placid. The roads are good even in October. The lower illustration shows the Connecticut river before reaching Chicopee Falls.

Detroit Is Lukewarm Over Contests

Makers in Wolverine Metropolis Evinced Little Surprise Over Postponement of the Glidden—Hudson and Chalmers Plants Start in On Production of 1912 Product—Hupmobile Ready

DETROIT, Mich., June 5—News that the Glidden tour had been postponed on account of a lack of entries created no great surprise among the Detroit manufacturers, only one of whom is understood to have entered as yet. Whether or not the fall event will be better patronized is a matter of grave doubt. It is certain that it will take a lot of persuasion from the A. A. A. authorities to get anything like a representative contingent of cars into line from the local plants. In fact, 1911 seems to be a very quiet season, so far as the factories and their interest in public competitions are concerned. There seems to exist a feeling that the big competitions are too risky for manufacturers with established reputations for their product to patronize with profit. This was particularly noticeable in the sweepstakes event at Indianapolis Memorial day, in which but one Detroit factory was represented, and this in the face of the fact that the Detroit manufacturers lead the world in the quantity and general popularity of their product.

Changing to 1912

Two Detroit plants are now engaged in the transition from 1911 to 1912 models. This is the case at both the Hudson and the Chalmers plants, neither of which will deliver more 1911 cars to their distributors. The Hudson company announces that its 1911 run consisted of 3,000 cars, and a new factory building, now fully equipped for a greatly increased rate of production in 1912, is ready. The Hupp Motor Car Co. has completed its shift and is now delivering 1912 models. The King Motor Car Co. has just finished its first run of ten touring cars and has turned them over to the Thompson Auto Co., Michigan distributor. They go out as demonstrators to the sub-dealers through the state.

Durant Denies Rumors

Announcement is made of a new firm of motor car builders now being formed by W. H. Little, former general manager of the Buick plant. The name of the firm and the location of the enterprise have not yet been announced. The car has been designed and a model built on the plans of Louis Chevrolet, formerly of the Buick company. Mr. Little has interested Detroit capital in the venture, it is announced. It is also asserted that W. C. Durant has interested capital in the venture. The new car will be of the 30 horsepower type and will be known as the Chevrolet.

A report has been current here that W. C. Durant has severed his connection

with the General Motors Co., of which he was the chief promoter. He has taken occasion to flatly deny this, however, and says that, on the contrary, he is still active in the management of the General Motors properties as a member of the board of directors. Mr. Durant retains his residence in Flint and his headquarters at the Buick factory. The factory force recently entertained the Wholesalers' Association of Detroit to the number of more than 100. Reports were brought back that the factory was running more than half of the full force and that in the neighborhood of 100 cars were being turned out every working day, by about 4,500 employees.

A meeting of the shareholders of the Lozier Motor Car Co. has been called, for the purpose of voting a proposed increase of the capital stock of the company. The company is now capitalized at \$2,000,000, of which all is common stock. It is proposed to increase this by the addition of \$500,000 in preferred stock, guaranteed dividends of 7 per cent. The stock will be offered to the present shareholders of the company before being placed on the market, and it is believed that the entire issue will be thus absorbed. The preferred stock is to complete the financing of the Detroit plant.

Truck Used By Soldiers

A novel use of motor cars is being made by the Twenty-sixth United States Regular Infantry, which left Fort Wayne Thursday, bound for Miller's road, on its annual camping expedition. The Packard truck which accompanies the regiment carried about 8,000 pounds of tents and camping paraphernalia and rations, as well as a 1,000-pound dynamo, which is used to light the entire camp ground. The entire column was also preceded by a Hupmobile scout car, which laid out the path for the truck and has also been used on messenger duty and for keeping the camp in close touch with the railroad and mails.

NEW CONCERN IN FINDLAY

Findlay, O., June 3—During the week the Findlay Motor Co. has passed out of existence and in its stead comes a \$1,500,000 corporation, to be known as the Ewing-American Motor Co., capitalized under the laws of the state of New York. The board of directors of the Findlay Motor Co., at a meeting held in this city, voted on this proposition and the deal, which has been pending for some time, was soon made. L. E. Ewing, who has been at the

head of the old company, will be president of the new company.

Under the new organization the Ewing-American Motor Co. at once secured enough money for many improvements to be made to the plant in this city, which will soon be made one of the largest of its kind in the country. Several hundred thousand dollars' worth of orders are on the company's books, and many more men will be put to work.

Of the new capitalization \$1,000,000 is common stock and the balance preferred. The preferred is now being marketed at \$105 per share for the first thousand. For the second 2,000 the price is \$110, while the last is \$115. All this money is now being paid into the treasury.

The identity of the New York parties who have invested largely in this enterprise has not been divulged, but one of them who was here several days during the week stated the company, which has been employing 200 men, should put to work at once at least 500. The same man also left an order for seventy-five trucks, to go to the New York Mail Co.

DEATH OF HENRY G. MITCHELL

Milwaukee, Wis., June 4—Henry G. Mitchell, first vice-president of the Mitchell-Lewis Motor Co., of Racine, Wis., died suddenly last week shortly after winning an important golfing match. Mr. Mitchell was born in Kenosha, Wis., in 1848 and attended the old Chicago university, leaving at 18 to enter his father's employ in the Mitchell Wagon Works, at Racine. His father probably was the first wagon maker in Wisconsin. When the Mitchell and Lewis interests were consolidated under the name of the Mitchell-Lewis Motor Co., about 2 years ago, Mr. Mitchell was elected first vice-president of the \$10,000,000 corporation and was active in its management up to the hour of his death. He was a brother to Mrs. W. T. Lewis, wife of the chairman of the Mitchell-Lewis executive directorate. The entire working force of the various Mitchell-Lewis plants at Racine attended the funeral in a body, more than 1,500 men being in line.

TRYING TO UNIONIZE BOSTON

Boston, Mass., June 5—Labor organizers are making efforts now to unionize the garage and repair shops in Boston. They have started men around who have been talking union principles to the workmen in a number of the shops. Circulars also have been passed around among the men stating that in some other cities where the repair men are unionized they get \$3.50 a day and work but 8 hours. The repair men have been invited to a meeting which is to be held soon, at which an effort will be made to form a large union of the Boston repair men.

A few days ago the workmen employed by C. F. Whitney, who handles the

Stoddard-Dayton in Boston, went on a strike demanding that they have a Saturday afternoon holiday the year round. Mr. Whitney was in Indianapolis at the race meet when the men struck, so the question was unsettled.

The Boston Automobile Dealers' Association has taken the matter of unionizing the shops under consideration now that they know the labor officials are at work in their garages and the entire matter will be threshed out thoroughly. What some of the dealers fear is that a portion of the men in their shops will join a union and then at a busy time walk out, leaving them in a quandary for a few days. However, as all jobs are taken subject to delay it would not cripple them so badly as in some other business.

The dealers generally do not object to union principles, but they do not like to have the matter brought about by men going into their garages without authority, and trying to unionize the places during working hours. There are times when work is very slack at the repair shops and garages and the dealers do not lay off their men, preferring to keep them doing a little something or other. But if the men become unionized and make demands for higher wages, shorter hours, etc., and force the dealers to this policy when the dull times come there will be a general layoff so that the men will not benefit very much after all.

PREPARES FOR BIG TOUR

Detroit, Mich., June 5—The runs and tours committee of the Wolverine Automobile Club has issued a booklet containing a full array of advance information concerning its affiliation tour, to be held June 22-30. The booklet contains a full list of hotels and garages along the route, and, when used with an entry blank, enables an intending participant to secure bookings at any hotel desired for each night of the tour.

A considerable convenience for the benefit of the tourists will be afforded by an Alden Sampson truck, which will transport free of charge a trunk for each of the contestants, carrying its load along the route of the tour and delivering the baggage nightly to the hotel to which it had been tagged in the morning. Another convenience will be the presence daily of a special tire car. This is provided by the tire dealers of Detroit and will be stocked with a complete set of inner tubes and outer casings. It will start last of all the cars each morning and will afford assistance to any tourist who drops out of line and waits for its arrival. The material will, of course, be sold at the regular price. The labor will be donated. Another hospital car has been entered by the Detroit Automobile Dealers' Association. This will carry a stock of repair parts and two expert mechanics, who will donate their services to

Report On the Exports and Imports

Uncle Sam Finds that 1433 Cars Valued at \$1,463,336 Were Shipped Abroad in April—In Last 10 Months American Makers Have Doubled Their Foreign Motor Vehicle Business

WASHINGTON, D. C., June 3—The fact that 1,433 motor cars, valued at \$1,463,336, together with parts, not including tires, to the value of \$323,528, were shipped abroad during April, strongly indicates the wonderful growth of the export trade in motor cars. During the same month of last year the number of cars exported was 687, valued at \$1,046,424, while the value of the exported parts was \$166,620.

During the 10 months' period ended April, 1911, the exports of cars and parts were nearly double those of the corresponding period of 1910. During the former period 8,783 cars, valued at \$9,748,630, and parts to the value of \$1,875,415, were shipped to all parts of the world, the grand total being \$11,624,045. The shipments of cars for the 10 months of 1910 numbered 4,867, valued at \$6,418,882, while the parts exported were valued at \$1,176,433, giving a grand total of \$7,595,315.

The detailed shipments of cars and parts during comparative periods were as follows:

Exported to—	1910	1911
United Kingdom	206,976	204,768
France	106,689	77,029
Germany	36,988	26,072
Italy	71,891	43,692
Other Europe	62,433	114,902
Canada	547,646	921,242
Mexico	49,087	51,174
West Indies and Bermuda	21,808	32,201
South America	43,286	93,637

motorists who come to grief along the route.

The final settlement of the last harassing detail contingent with the crossing of the dominion frontier was completed recently, when the Ontario government promised to honor for 4 days the license tags issued by the states from which the tourists will come. This obviates the necessity for taking out separate licenses on crossing the border. The Canadian law requires licenses for both car and driver.

SENSATIONAL FRENCH CLIMB

Paris, May 25—A record-breaking performance marked the sixth annual hill-climb at Limonest, in the suburbs of Lyons, Deydier, entered in the racing section with a Cottin-Desgouttes four-cylinder of 5 1/2 by 7 4/5 inches bore and stroke, covering the 2.3 miles of hill in 2 minutes 25 3/5 seconds. The average grade was 7 per cent, and a standing start was made.

In all there were seven racing classes, with the cars classified according to cylinder bore. In the smallest class the best work was done by Goux, with one of the

British Oceania	10,011	130,905
Asia and other Oceania	39,291	57,363
Other countries	16,938	33,879

Ten months ending April

1910 1911

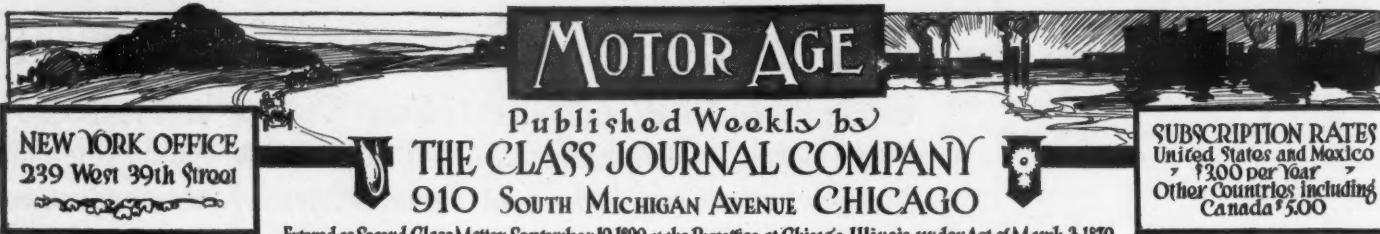
Exported to—	1910	1911
United Kingdom	1,551,576	1,862,758
France	482,855	422,251
Germany	154,793	211,771
Italy	289,818	174,399
Other Europe	247,087	557,178
Canada	3,057,456	4,805,689
Mexico	455,957	596,815
West Indies and Bermuda	394,387	343,433
South America	275,120	687,921
British Oceania	307,312	1,036,589
Asia and other Oceania	245,743	672,013
Other countries	133,211	253,228

While our export trade in cars and parts is growing by leaps and bounds, the imports are declining in like proportion. During April last sixty-two cars, valued at \$141,933, were imported, together with 47,454 worth of parts, while in April a year ago the number of cars received in this country was 127, valued at \$213,177. The imported parts were valued at \$83,704. During the 10 months' period the imports of cars declined from 1,276, valued at \$2,244,873, in 1910, to 696, valued at \$1,484,283, in 1911.

The imports of parts likewise decreased in value from \$831,764, to \$288,322. During April last cars were imported from the following countries: United Kingdom, eleven, valued at \$28,988; France, twenty-two, valued at \$52,289; Germany, three, valued at \$9,166; Italy, six, valued at \$10,072; other countries, twenty, valued at \$41,418.

new Lion-Peugeot four-cylinder models built for the grand prix race, and having a bore and stroke of 2 1/2 by 10 1/5 inches. It rushed the hill in 4:06.9. In the next higher class a La Buire stock chassis stripped for racing was first in 3:51 3-5. The others in their respective classes were Dumond, on a six-cylinder Gregoire, in 3.59 1-5; Lacharnay, on a four-cylinder La Buire, 4 inches by 5.9 inches bore and stroke, 2:59 3-5; Deydier, on a Cottin-Desgouttes of 4.7 by 6.2 inches bore and stroke, 2:47 1-5; the same driver in his record performance with a more powerful car; and Grua, on a Bayard-Clement of 6.2 by 6.2 inches, in 2:41.9.

In the four tourist classes the respective winners were Peugeot, Gregoire, Ford, and Pilain. The Gregoire, with its four-cylinder 3.1 by 6.2 motor made the fastest time of the tourists, climbing the hill in 3:44 3-5; the Pilain, of 3.9 by 5.5, was second best, in 3:52 4-5; but the performance of Ford, a standard model entered by the French agent and carrying four passengers, really was remarkable, its time of 4:11 4-5, being better than that of such big cars as the Panhard-Knight, and Delaunay-Belleville.



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Canada \$5.00

The 500-Mile Race

THE 500-mile sweepstakes race held on the Indianapolis speedway a week ago will live for many years in the memory of the 80,000 people who saw the race. It will live as a memory of a spectacle rather than as a struggle for supremacy between great motor cars. The race was a spectacle from the start until almost 400 miles had been covered, after that it became a race in the minds of many thousands of spectators. It was a spectacle only with tens of thousands, because there were too many cars on the track. The spectator could not follow the race. Too many cars were passing the grandstand to keep tab on the laps, there was not time enough to put the laps down, one man could not possibly score the laps, so quickly did the cars follow one another across the starting and finishing line. After fifteen of the cars were eliminated for one cause or another the spectators could sufficiently control the field and found out where the real fights for victory were taking place, but often these were upset a few laps later, when a new count was announced. As it was many team managers could not intelligently signal their drivers, all they could do was to signal the speed in miles per hour that they were traveling at. This robbed the race of that great interest which is ever present when the spectators and all others know at all times exactly how the different cars are running.

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THE race was too long. It did not tire the drivers perhaps as much as was expected, but it did tire thousands of spectators. Had 150 miles been cut off the distance it would have been much better, and better still, had only twenty-five cars been allowed to start. With twenty-five starters it would have been possible for the timers to have made sufficient announcements during the race so that the race could have been intelligently followed; with twenty-five starters team managers would have been better able to control their drivers; with twenty-five starters team managers would have been able to get information on the number of laps their different cars made, which in many cases they were not able to get; in fact, the race would have been 100 per cent more successful in every respect with a limited field.

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ONE feature that robbed this great spectacle of much interest was the fact that it was not a stock-car event. The spectators watched cars, but they did not in many cases know what they were watching. For example, one car was entered under the name of a firm at present building cars, but was not built by that firm, in fact the motor and other parts was built by a company that has been out of business several years. It was not the fault of the company, however, because it did not try to conceal the facts in making the entry, and the Manufacturers' Contest Association allowed the matter to go through. It is very damaging to any sport when a car enters as a Smith car and was built by the Jones factory. If this condition continues it will be possible for the Brush company to buy a 200-horsepower Benz and enter it in events as a Brush. This should not be allowed, and if the present rules of the Manufacturers' Contest Association or the American Automobile Association are not broad enough to cover such undesirable conditions, the case is bad enough to stand on its own merits and should have been decided as such. Conditions of this nature discourage the sport and destroy public confidence in the sport. Who would want to see a race if he knew that the car running as a Hupmobile might be a six-cylinder Marmon; or if a car entered as an Empire might be a 200-horsepower Locomobile? It is a condition that should be stopped at once.

Die-Cast Aluminum Parts

EUROPE always has been a leader in the art and science of making casting for motor car parts, and now many of the French and English car manufacturers are building cars in which a new art in the matter of making castings is made use of. This is in the employment of die-cast aluminum parts, such as crankcases, gearbox halves, dashes and, in some cases, differential housings for the rear axle. These die-cast castings are made in metal moulds, and the secret of the casting consists in the temperature at which the mould is kept at when the metal is poured. The moulds are heated to a very high temperature. Using die-cast casting the work of manufacture is greatly cheapened. For example: It requires but 15 minutes to put the different parts of the mould together, bring the mold to the desired temperature, pour the metal and remove the casting. Where moulds are made from sand several hours often are required for the difficult casting.

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BUT besides being cheaper to produce, because it is more quickly made, the die-cast casting is cheaper because it is easier to manufacture after made. To explain: If the casting is the lower half of a gearbox all of the dozen or more holes are formed when the casting is made so that drilling is eliminated, the work being so accurate that the holes can be threaded without any preliminary work, or if they have not to be threaded a light reaming cut is all that is needed.

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WITH die-cast casting the outer surface is smooth enough when taken from the mould, and there is no loss of time in burining the casting or roughing of angular parts. The tensile strength is higher than the casting made in a sand mould and the weight is less, the casting being somewhat thinner. American foundry people can study to advantage the die-cast process for aluminum and will be amply repaid by the economy of the work.

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THERE is no royal road to learning, and in no other part of the motor car field is this truer than in foundry practice. Many foundries, making cylinder casting and aluminum castings, operate on a more or less rule of thumb law. With many European foundries this is not the case. The foundry management employs a corps of engineers; one is an expert metallurgist, a second is an expert mechanical engineer, a third is an expert geologist, understanding the different sands and silicates for core and mould work, and a fourth is an expert chemist. With a force of this nature every detail of the science can be investigated and the best work produced. It costs money to start out with such a force, but it works for economy in the long run. Money spent in this way is saved in the reduction of spoiled castings and in the reputation made by good castings in all lines.

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ONE year ago those who did not want to build foredoor cars were loud in their predictions that the fore door would not live because it would make the front seat too hot. Time has proven otherwise, and although it adds to the heat, it is quite easy to guard against too high temperatures by using asbestos under the floor boards and employing many of the simple forms of ventilators now on the market. The merits of the fore door are so great in comparison with its disadvantages that there is a certainty to be a score of cures for any little ill that may arise. It is a fact that some rather conservative makers started last fall building cars without the fore door believing they would sell better, but these makers have the old-fashioned bodies on hand and have been compelled to build bodies with the fore door attached. This but proves the old adage, that whatever is good will win out.

Glidden Tour Postponed By A. A. A.

CHICAGO, June 3—The Glidden tour has been postponed, this being announced yesterday by S. M. Butler, chairman of the contest board of the American Automobile Association, who ran up to Chicago from Indianapolis on his way back to New York, to talk over the matter with his western colleagues. No date has been set for the big affair, but it likely will be put back on the calendar for the early fall.

Chairman Butler took this action because of the requests made by some of the manufacturers who desired to enter 1912 models. This could not be done if the tour had started on the date originally selected, June 21, for the reason that the rules governing the contest require the competition of stock cars only. The A. A. A. rules specify that no model is stock until at least twenty-five cars of that particular style have been manufactured. At this time of the year it is doubted if many manufacturers would be in position to meet this requirement. The 1912 models which now are on the road generally are confined to two or three cars—experimental in most cases—so that twenty-five-car rule would be hard to meet.

There is no dissatisfaction regarding the route selected and it hardly is likely there will be any change made in the itinerary as announced immediately following the trail-blazing expedition in the Stevens-Duryea.

NEW TRACK FOR CHICAGO

Chicago, June 5—It is likely Chicago will have a board track by fall, the owners of Hawthorne having announced that if the meet which is scheduled for this week is the success anticipated they will at once convert the old horse track into a motor speedway made of board. It is hoped to have it done by fall and to open it with a 24-hour race, for which a purse of \$25,000 will be hung up. Homer George has been engaged as manager of the track in case the deal goes through.

NEW PLANT FOR COLE

Indianapolis, Ind., June 5—At the first annual banquet of Cole 30 owners held at Indianapolis the day before the big race, J. J. Cole, of the Cole Motor Car Co., announced that plans were under way for the construction of one of the largest up-to-date car manufacturing plants in the country. He stated that the present business had outgrown the capacity of the Cole plant, which now includes four separate buildings in the Hoosier capital city. J. J. Cole and C. P. Henderson, of the Henderson Motor Sales Co., who are the na-

Contest Board Wishes To Give Makers a Chance To Enter 1912 Models In the National Endurance Run This Year



June 8—Algonquin hill-climb, Chicago Motor Club, National circuit.
 June 10-11—Track meet, Chicago, Homer George, promoter.
 June 10—Reliability run for electrics of Quaker City Motor Club, Philadelphia.
 June 10—Yale hill-climb at West Haven, Conn.
 June 13-14—Milwaukee track races, state fair grounds, National circuit.
 June 15-16—Interclub reliability match, Chicago Automobile Club-Chicago Athletic Association.
 June 17—Portland hill-climb, Maine Auto Association.
 June 17—Ossining hill-climb, Upper Westchester Auto Club.
 June 18—Volturette and light-car road races, France.
 June 19—Reliability run of Hyperion Field and Motor Club, Des Moines, Ia.
 June 20—Reliability run of St. Louis Auto Club.
 June 24—Brighton Beach races, New York, National circuit.
 June 24—Hill-climb of Quaker City Motor Club, Philadelphia.
 June 25—Grand prix of Automobile Club of France.
 June 25—Endurance contest, Denmark.
 June—Hill-climb, Norristown Auto Club, Norristown, Pa.
 June—Reliability run of Denver Motor Club.
 June—Reliability run of Oklahoma Auto Association.
 July—Track race, Panhandle Auto Fair Association, Amarillo, Tex.
 July 1—Road race, Riverhead, L. I., National circuit.
 July 1-3—Reliability run of Motor Contest Association through Catskills.
 July 4—Hill-climb, Port Jefferson, L. I., National circuit.
 July 4—Road race, Kern County Merchants' Association, Bakersfield, Cal.
 July 4—Track race of Wolverine Auto Club, Detroit.
 July 4—Track race, Denver Motor Club.
 July 4-20—Prince Henry tour.
 July 7—Track race, Taylor Auto Club, Taylor, Tex.
 July 8 or 15—Track race, Norristown Auto Club, Philadelphia.
 July 9—French grand prix road races.

tional distributor for Cole cars, have been sought by a number of commercial organizations in an effort to have the Cole factory located in another city. But it is definitely decided that the factory will remain in Indianapolis. While the architects are now working on the plans for the new factory, Mr. Cole prefers that they be kept secret until perfected.

BOSTON'S ORPHANS' DAY

Boston, Mass., June 5—Through the generosity of many motorists and other kind-hearted people of the Bay State—nearly 1,500 children enjoyed an outing today to Sharon. It was the annual event for blind, crippled and orphaned children of

Boston and the trip was a bigger success than the one of a year ago. It took something like 250 cars to carry the children, matrons and officials to Sharon and back. When the entire group was figured up it represented at least 1,700 people. The motor cars were divided into fourteen divisions.

The weather was better suited for the outing than if the sun was shining, for once the children reached Sharon and were let loose they ran about without getting overheated. There were plenty of amusements for all, and even the blind and crippled children found the outing well suited for them. Many were taken out in boats, others went wading, some played ball, more played tag and such other pastimes as they suggested themselves.

While the children were enjoying themselves in their own way the men who drove the cars out were having their fun in a series of athletic games, comprising track and field events. No time was taken for any of the events because the distances were in most cases measured approximately. The sports finished with a couple of games of ball, these allowing a number to take part, for substitutes were plentiful.

Shortly before 4 the attendants rounded up the children and as the cars were parked according to divisions and with different colors there was no difficulty in getting a start for home.

GLIDDEN CASE POSTPONED

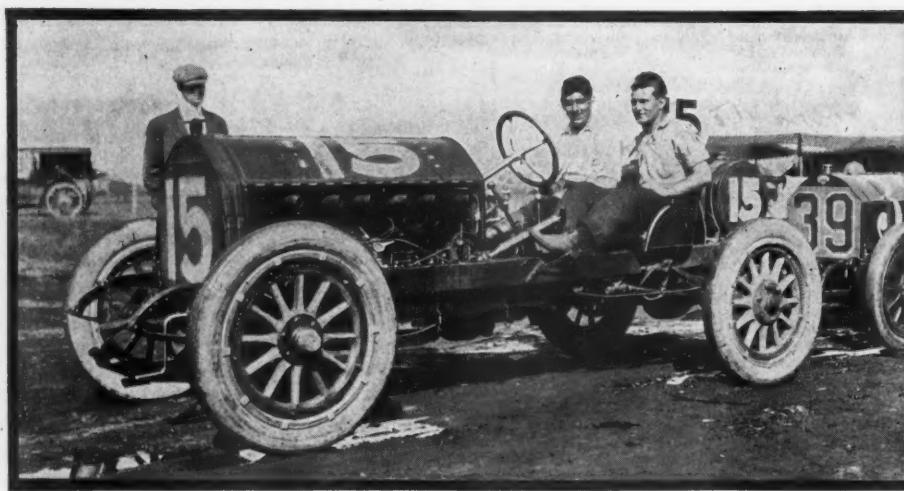
New York, June 7—All parties to the Glidden-Premier injunction suit appeared before Judge Marean this morning and moved for a continuation for one week. This motion was granted and proceedings were given another stay. Negotiations have been in progress for some time looking to a settlement and it is almost certain that the agreement contemplates the voluntary withdrawal of the injunction case.

The referee of the Glidden tour awarded the trophy to the Premier entry, but this ruling was reversed by the contest board on the grounds that the Premier Co. failed to prove that its entry was strictly stock. The cup thus fell to the Chalmers, the car with the next highest score. The claim of the Premier Co. was to the effect that as its entry checked up with its stock car certificate the contest board, by allowing it to start, tacitly agreed that the car was eligible. Judge Marean declared that the Premier was entitled to the cup, providing no fraud was used in gaining entrance to the contest. The hearing on the stock status of the car was postponed until yesterday and again postponed today. In all probability a motion will be made next Wednesday to withdraw the whole case.





STUTZ CAR THAT FINISHED IN INDIANAPOLIS RACE



KNOX THAT COMPLETED THE FULL 500 MILES AT INDIANAPOLIS

Indianapolis Aftermath

INDIANAPOLIS, IND., June 6.—To look at the speedway now one would not imagine that just a week ago today forty drivers battled for supremacy in a 500-mile race that is declared to have been the most sensational ever run in this country. The week that has elapsed since Harroun was declared a winner has been replete with incidents, not the least of which was the strenuous session of the checkers and timers, who revised their reports after working about 30 hours on them.

On the revised standing Joe Dawson is ranked fifth instead of being reckoned as not finishing. It was found that the Marmon star had completed his final lap when he had engine trouble, so the judges simply shoved him into fifth place, in between Wishart in the Mercedes and de Palma in the Simplex.

Checking over the times also made some difference and resulted in favor of Mulford in the Lozier in that it brought him much nearer to Harroun. Instead of being 4 minutes 43 seconds behind, Mulford, according to the revised count, only was 1 minute 43 seconds to the bad.

Denial is made by the Inter-State people that Harry Endicott had any mechanical trouble whatsoever. Motor Age stated: "Harry Endicott's Inter-State was forced to stop eleven times for tires and twice

COMPLETE RETURNS ON 500-MILE RACE AT INDIANAPOLIS ON MEMORIAL DAY

No.	Car	Drivers	25 Miles Time—Pos.	50 Miles Time—Pos.	75 Miles Time—Pos.	100 Miles Time—Pos.	150 Miles Time—Pos.
32	Marmon	Harroun-Patschke	19:30—5	41:11—9	1:00:39—5	1:20:18—3	1:59:15—2
33	Lozier	Mulford	19:43—7	39:29—4	59:14—2	1:20:42—5	2:00:23—4
28	Fiat	Bruce-Brown	19:15—3	39:05—2	58:42—1	1:18:22—1	1:57:15—1
11	Mercedes	Wlsbhart	20:31—11	40:38—6	1:00:47—6	1:20:51—6	2:03:48—7
31	Marmon	Dawson-Patschke	19:35—6	42:09—16	1:02:32—12	1:22:19—9	2:03:39—6
2	Simplex	DePalma	19:17—4	39:05—1	1:00:10—3	1:19:47—2	1:59:20—3
20	National	Merz	20:57—19	41:14—10	1:01:38—9	1:22:15—8	2:05:53—10
12	Amplex	Turner	19:46—8	39:54—5	1:00:51—7	1:21:14—7	2:05:28—9
15	Knox	Belcher	19:10—1	41:57—15	1:07:18—28	1:25:24—16	2:07:36—11
25	Jackson	Cobe	22:43—35	43:34—25	1:04:15—15	1:23:09—11	2:11:36—18
10	Stutz	Anderson	20:38—14	42:43—19	1:06:52—26	1:25:41—19	2:09:07—14
36	Mercer	Hughes	21:54—28	41:54—14	1:02:49—13	1:27:44—21	2:11:41—21
30	Firestone	Frayer	29:00—30	51:43—37	1:13:21—33		2:24:56—28
21	National	Wilcox	20:33—12	42:57—21	1:05:28—21	1:25:38—18	2:10:15—17
37	Mercer	Pigelow	22:19—32	44:22—30	1:07:00—27		2:13:39—23
3	Inter-State	H. Endicott	21:06—21	45:06—33	1:06:30—25		2:20:16—25
41	Velle	Hall	22:10—29	44:46—32	1:08:51—30		2:23:28—27
46	Benz	Knipper	20:53—17	42:18—17	1:10:18—32		2:21:56—26
45	Benz	Burman	20:56—18	41:48—13	1:04:10—19		2:11:50—20
38	Simplex	Beardsley	21:20—23	43:03—22	1:05:25—20		2:11:41—19
18	Fiat	Hearne-Parker	21:20—24	42:25—18	1:03:50—14	1:25:10—14	2:09:27—15
6	Pope-Hartford	Fox	20:50—16	44:11—29	1:05:32—22	1:26:38—20	2:09:52—16
27	Cutting	Delaney	22:27—33	44:37—31	1:07:36—29		2:25:03—29
26	Jackson	Tower	21:34—26	43:03—23	1:04:19—17		2:08:12—13
23	McFarlan	Marquett	21:40—27	42:52—20	1:04:18—16	1:25:26—17	2:50:26—31
35	Apperson	Lytle	21:02—20	43:44—26	1:04:36—18	1:25:11—15	2:07:56—12
9	Case	Jones	22:14—30	44:03—28	1:06:09—23		2:16:37—24
42	Cole	W. Endicott	22:52—36	45:40—34	1:13:42—35		
4	National	Aitken	19:15—2	39:07—3	1:00:29—4	1:20:27—4	2:01:25—5
1	Case	Strang	22:31—34	47:59—35	1:11:10—33		2:28:13—30
7	Westcott	Knight	20:41—15	41:19—11	1:02:12—11	1:23:15—12	2:04:57—8
8	Case	Jagersburger	21:17—22	43:30—24	1:06:09—24	1:28:18—22	2:12:25—22
19	Alco	Grant	20:34—13	41:25—12	1:02:05—10	1:23:03—10	Out 52d lap
5	Pope-Hartford	Disbrow	22:18—31	1:00:23—38	1:31:08—37	1:25:07—13	Out 46th lap
34	Lozier	Tetzlaff	20:26—10	40:51—8	1:01:18—8	Out 21st lap	
17	Buick	C. Basle	24:43—38	48:13—36	1:08:55—31	Out 47th lap	
16	Buick	A. Chevrolet	23:18—37	43:49—27	1:14:57—36	Out 31st lap	
39	Fiat	Bragg	20:15—9	40:44—7	Out 24th lap		
24	Jackson	Ellis	39:10—40	1:21:15—39	Out 23d lap		
44	Amplex	Greiner	21:29—25	Out 13th lap			

Revise Race Standing

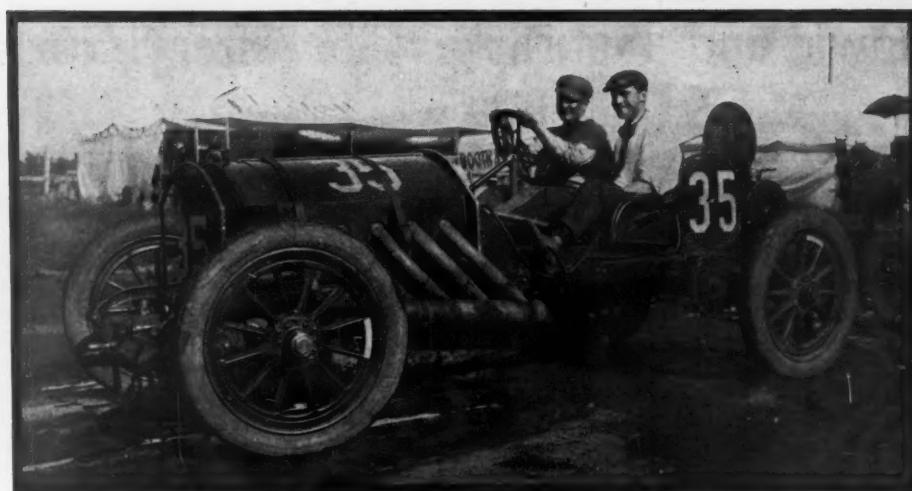
for oil and gasoline. On one of these the carbureter was adjusted, but no other mechanical troubles were encountered."

The Inter-State company declares there was no adjustment of any kind made on any part of the car during the entire race, and that the condition of the carbureter would preclude any possibility of its being adjusted without raising the hood. As a matter of fact, it is claimed, the hood strap on the Inter-State never was unbuckled during the entire race.

It has been decided definitely by the speedway people that there will be only one race meet a year on the big track, and that this will be held on July 4 beginning in 1912. The management feels one big meet is all it can undertake in a year. It has been decided to hold it July 4 because of the opposition that has arisen among the old soldiers to having it run on Memorial Day.

ALGONQUIN'S BIG FIELD

Chicago, June 6—Sixty-five entries have been received for the sixth annual hill-climb of the Chicago Motor Club, which will be held Thursday. It is a representative lot of cars that have been nominated, including the Case, National, Falcar, Velie, Henry, Ford and others. In the free-for-all is Hearne's 120-horsepower Benz.



LYTLE IN APPERSON THAT HAD HARD LUCK



COBE IN JACKSON, ONE OF THE FINISHERS

AS REVISED BY THE OFFICIALS AFTER REPORTS OF CHECKERS AND TIMERS

200 Miles Time—Pos.	250 Miles Time—Pos.	300 Miles Time—Pos.	350 Miles Time—Pos.	400 Miles Time—Pos.	450 Miles Time—Pos.	500 Miles Time—Pos.	Miles per Hr.
2:40:22—3	3:18:45—2	4:01:25—1	4:44:14—2	5:23:15—1	6:03:45—2	6:42:08—1	74.59
2:41:22—4	3:21:26—3	4:02:21—2	4:42:38—1	5:24:43—2	6:03:01—1	6:43:51—2	74.29
2:39:28—1	3:17:49—1	4:03:56—3	4:49:01—3	5:29:47—3	6:08:18—3	6:52:29—3	72.73
2:42:34—5	3:29:58—6	4:06:56—5	4:51:06—5	5:35:55—5	6:13:34—5	6:52:57—4	72.65
2:45:41—6	3:28:20—5	4:08:07—6	4:49:55—4	5:29:49—4	6:08:34—4	6:54:34—5	72.34
2:40:13—2	3:22:50—4	4:05:23—4	4:58:16—6	5:41:30—6	6:24:42—6	7:02:02—6	71.13
2:47:08—7	3:30:24—7	4:15:05—7	5:00:06—8	5:44:00—7	6:28:07—7	7:06:20—7	70.37
2:47:16—8	3:33:42—8	4:17:55—9	4:59:46—7	5:45:21—8	6:31:11—8	7:15:56—8	68.82
2:50:00—11	3:40:48—14	4:24:43—13	5:10:35—12	5:52:27—11	6:32:53—9	7:17:09—9	68.62
2:52:43—15	3:35:07—9	4:19:00—10	5:02:59—9	5:45:58—9	6:40:28—12	7:21:50—10	67.90
2:54:27—18	3:37:49—11	4:22:52—12	5:10:21—11	5:44:01—12	6:38:45—11	7:22:55—11	67.73
2:57:00—21	3:40:45—13	4:22:23—11	5:07:19—10	5:50:16—10	6:33:44—10	7:23:32—12	67.62
3:08:56—27	3:53:30—19	4:35:13—16	5:18:29—30	6:01:28—13	6:43:09—13	Running	
2:52:09—14	3:39:20—12	4:27:08—14	5:21:03—14	6:07:54—15	6:53:00—14	Running	
2:59:58—22	3:47:46—15	4:34:10—17	5:24:18—15	6:08:34—16	6:54:49—15	Running	
2:08:03—26	3:54:57—20	4:43:07—18	5:29:20—18	6:11:08—17	7:03:28—16	Running	
3:06:53—24	3:57:29—21	4:44:03—20	5:31:33—19	6:20:46—18	7:04:32—17	Running	
3:17:53—30	4:01:44—22	4:43:46—19	5:25:02—16	6:05:45—14	7:12:53—18	Running	
2:54:46—19	4:17:51—24	4:58:37—21	5:46:36—21	6:40:15—20	7:22:04—19	Running	
2:53:20—16	3:50:57—18	5:26:40—17	6:22:28—19	Running		
2:53:21—17	4:19:12—26	5:05:59—23	5:49:45—22	7:00:33—21	Running		
2:51:57—13	5:10:22—29	6:01:02—27	6:43:01—23	7:26:28—22	Running		
3:07:24—25	3:49:32—17	6:00:49—26	6:45:52—25	7:29:38—23	Running		
2:50:44—12	3:47:58—16	5:03:30—22	5:45:47—20	Out 145th lap			
3:43:41—31	4:50:47—27	5:52:51—25	6:45:33—24	Running			
2:49:22—10	4:34:02—15	Out 83d lap				
3:12:11—28	4:14:42—23	5:11:29—24	Out 122d lap				
Running							
2:55:34—20	3:37:04—10	4:16:54—8	Out 125th lap				
3:15:53—29	4:18:53—25	Out 109th lap					
2:48:52—9	Out 98th lap						
3:02:02—23	Out 89th lap						

Iowa and Nebraska Go After Roads

Many Meetings Are Held for the Purpose of Stirring Up Enthusiasm Over Improvement of the Highways—Cornhuskers and Hawkeyes Determined To Have Better Thoroughfares

OMAHA, Neb., June 5—S. A. Searle, vice-president of the Omaha-Denver Highway Association, J. E. George and H. E. Fredrickson returned last week from a trip to Lincoln made to lay out the first leg of the South Platte road from Omaha to Denver. Other members of the association are routing short sections of the highway, so that in a short time a complete description of the whole route will have been secured. This information is all to be incorporated in the guide book of the association, which will be printed in a few days. It will give the most definite information about the whole route.

The men found an exceptional amount of interest in the road all along the way, so far as they went. The commercial clubs and motor clubs were not the only ones interested, but the farmers, too, realized the value of better roads and were getting busy. Many of them are dragging the roads near their property.

The towns on this highway, which is now assured and upon which active work has already begun, are: Omaha, Millard, Springfield, Meadow Station, Louisville (crossing the Platte), Greenwood, Waverly, Havelock, Dorchester, Friend, Exeter, Fairmont, Grafton, Sutton, Saronville, Harvard, Flickville, Hastings, Juniata, Heartwell, Minden, Axtell, Funk, Holdrege, Atlanta, Oxford, Edison, Arapahoe, Holbrook, Cambridge, Bartley, Indianola, McCook, Culbertson, Palisade, Wauneta, and Imperial, joining the Denver end of the highway at Holyoke, Colo.

Arousing the Hawkeyes

Cedar Rapids, Ia., June 4—To raise \$2,000 for good roads and to form the Cedar Rapids good roads division of the Iowa transcontinental route was short work at the good roads meeting here last week owing to the tremendous enthusiasm following the annual meeting of the association meeting at Clinton. The meeting was held in the club rooms of the Cedar Rapids Commercial Club. Prominent good roads men from all over the state and from outside points addressed the meeting, and following the address of W. F. Coan, of Clinton, the father of the White Post road of which the new club is to be a part, President Haskell immediately announced he was ready to take ten memberships for himself, which was followed by a large number of those present. A committee of fifteen prominent business men and members of the commercial club was appointed by President Haskell, with J. M. Dinwiddie of the good roads committee as chairman. This committee will

have charge of the campaign for memberships, which will begin at once an effort to secure 1,000 members for the Cedar Rapids division of the Iowa Transcontinental Route Association. One-half of the money raised on the memberships, which has been placed at \$2 per member, will go to improve the roads between Cedar Rapids and points east and west of this city, while the other half will go to the treasury of the route association, which is to be used in improving the road at more distant points, keeping the road signs in repair, repainting the white post stripes, printing and distributing maps and literature, and to give publicity and advertising the road in the principal motoring magazines throughout the country.

Meet and Talk Roads

Clinton, Ia., June 4—The annual meeting of the Iowa Official Transcontinental Route Association, the White Post and Stripe route, the first annual meeting of any route association, held last week in Clinton, showed a most successful culmination of a year's effort to develop a perfect cross state road. Almost the entire executive committee and nearly 500 members were in attendance and the meeting was the most enthusiastic ever held.

According to the report of the secretary, W. C. Rollins, 500 official signs now mark nearly every mile of the road, together with sixty-seven danger signs, while the White Post system of signs facilitates touring over the route day or night without the use of guide books. Nearly every mile of the road is in excellent condition through the efforts of the county vice-presidents, and they report that work is being done daily on nearly every inch of the road.

Owing to the popularity of the white stripe on the telephone poles, the original method promoted by the officials of the White Post road which through its simplicity is the simplest and easiest way to mark a road and which has been copied by nearly every road association in the country, the officers decided to adopt and put into immediate use a new road marking system, which will be distinctly the property of the road. The new method consists of adding a 6-inch block letter T to the white stripe already in place, which will distinguish it from any other road or cross-road crossing the main line and will prevent the tourist from getting confused, especially at the turns, which might lead him off the main route. Owing to the neatness of the design, it has met with the approval of the officials of the various municipalities.

For the benefit of tourists postal card sized maps will be distributed along the route at the garages and hotels. Another feature of the road was brought out which is of considerable importance to those intending to make the Iowa trip, and that is while other cities of Iowa having roads connecting with Illinois roads have only one bridge and that only open during certain hours, Clinton, the eastern terminus of the Iowa White Post road, has two highway bridges across the Mississippi river open day and night to tourists who choose the air line route across the country.

Winning More Recruits

Omaha, Neb., June 6—Three more county organizations have been affiliated with the Nebraska Automobile Association during the past week, the organizations in two of these counties being new ones. D. E. Watkins, secretary of the state association, held a meeting at Aurora which was well attended by motorists, and the county supervisors were also present. They fell in with the good roads plan of the state association and promised to boost it. Another meeting will be held this week to make the organization permanent. He also held a meeting at Plattsmouth, where a temporary organization was effected. A meeting was called at Louisville for this week, at which the organization will be made permanent. Another well attended meeting was held at Beatrice, and final arrangements made there.

More Routes for Iowa

Sioux City, Ia., June 5—At a meeting of the Sioux City Automobile Club last week plans were laid for work on three different roads from this city and meetings called to form organizations to boost them. A meeting of delegates from towns on the newly proposed Council Bluffs-Sioux City-Spirit Lake road was called for Thursday, June 8, at the West hotel. The clubs of Omaha and Council Bluffs are invited to send delegates, as are all the townships through which the road will probably run between Sioux City and Council Bluffs. Executive committeemen from Pottawattamie, Harrison and Monon counties will be chosen and a working delegate to look after the delegates in every township will be named.

G. O. Jamesson was elected president of a provisional organization for a Sioux City-Sioux Falls motor route. H. H. Everist was chosen secretary. It was decided to call out all of the cars to go out as pathfinders over the two routes proposed between the two cities Sunday morning, going on one route and returning on the other. The mayor or club of each town on this highway was requested to send delegates to a meeting early in the afternoon of Thursday, June 8, for the purpose of effecting a permanent organization and deciding on the official route.

A unique resolution was offered and unanimously carried. It was as follows:

"Resolved, That it is the sense of the Motor Club of Sioux City that hereafter each member be requested to carry a spade at all times in his car and to quit using the hammer and knocking about poor roads, but to use his spade and do his share to help make good roads, especially in filling up the thank-ye-ma'ams and approaches to bridges and culverts."

Another road is being proposed to connect Sioux City with the projected transcontinental highway. It is proposed to make this a branch of the national highway, running from Denison to Sioux City. In view of the other roads projected from Sioux City, it is deemed that this would be a most important one.

Hobson's Road Bill

Washington, D. C., May 28.—Representative Hobson, of Georgia, is the author of a bill just introduced in congress, to provide for the construction, maintenance and improvement of post roads and rural delivery routes through the co-operation and joint action of the national government and the several states in which such post roads or rural delivery routes may be established in this country.

The bill provides that upon application to the said director by the legislature of any state, or such officer as the legislature may designate, requesting national aid in the improvement of any post road or rural delivery route, and setting forth that such road is a post road or rural delivery route; that it is in a main traveled highway; that its improvement would be of great benefit to the state; that funds will be available on the part of the state or local authorities to defray half of the expense of the proposed improvement of such road; it shall be the duty of the said director to cause investigation to be made as to the correctness of all the statements made in such application, and to determine whether such improvement is desirable and for the general welfare. If he shall approve such application, he shall so inform said state authorities, and then surveys, plans, specifications, and estimates for such improvement shall be prepared, as may be determined by the joint action of the said director and state authorities and which shall also be jointly approved. After these have been approved and the director is satisfied that the portion of estimated cost to be borne by the state will be duly available, it shall be the duty of the said director and state authorities, as they may agree, to advertise for bids for the carrying out of such improvement. The bids shall be made and contracts awarded under such rules and regulations as the said director and state authorities may prescribe.

The bill carries with it an appropriation of \$100,000,000 to carry out the purposes of the act, of which \$20,000,000 shall be available annually for the object named. Just what fate this bill will meet in congress is of course problematical.

Twin Cities Planning A Great Tour

Trail Blazed for Endurance Contest from Minneapolis and St Paul to Helena After Exciting Experiences—Test Will Be Held Next Month and Will Attract a Large Entry List

MINNEAPOLIS, MINN., June 3—With the arrival at Helena of the Minnesota State Automobile Association's pathfinding Halladay for the Twin City-to-Helena run which will be made next July 7:15 on May 23, a most strenuous pathfinding expedition was brought to a close. The total mileage was 1,420 miles, including the extra roadfinding which the car had to do. The pathfinders started from St. Paul on the morning of May 10 with Charles Harrington, the official pathfinder for the tour at their head and were gone 13 days. The roads generally were very muddy on account of the heavy rainfalls, but county commissioners all along the route have promised great improvements except for about 110 miles and by the middle of July, when the tour is planned for, they will be in excellent condition.

Trip a Strenuous One

A run of 122 miles was made the first day from St. Paul to Sauk Center, passing through the towns of Anoka, Big Lake, Elk River, Clear Lake, St. Cloud, St. Joseph, Albany and Freeport. The first strenuous experience of the long journey was a Minnesota sandstorm so violent in character that immense piles of sand were driven across the roads. The car was a few miles from Sauk Center. Barnesville, Minn., was reached the second day at 10:30 p. m., after having been lost in a snowstorm.

The third day's journey from Barnesville to Fargo was strenuous in the extreme, having been made over gumbo roads so soft that for half the distance the car was up to the hubs in mud.

From Fargo to Grand Forks, N. D., the fourth day's trip, the party passed over some of the best roads of the trip. Grand Forks showed its interest in the coming tour by furnishing an escort all the way from there to Devil's Lake, a distance of 100 miles. The whole of the fifth day was consumed by this trip and the big Halladay with its pilot arrived here at 6 o'clock in the evening. The usual difficulty, muddy roads, was met with.

Over roads which for mile after mile were completely covered by water, the pathfinder fought its way from Devil's Lake to Rugby, arriving there in a driving rain at 5 o'clock in the afternoon of the sixth day. The roads in this section of the country are as level as a floor and in July it is probable there will be no delay.

The only accident on the trip was experienced on the seventh day, when lightning struck the Halladay car during a

severe electric storm a few miles from Tunbridge, N. D., injuring three members of the car, including the driver, George Daubner. This caused a delay of 2 hours, but at 7:30 Minot, N. D., the night stop, was reached.

The eighth day's trip from Minot to Williston, N. D., a distance of 100 miles, was made without any unpleasant experiences, and the ninth day a similar distance was covered, leaving Williston early in the morning and reaching Wolf Point, an Indian village, in the evening. From a scenic standpoint this day's trip was the most wonderful of the whole tour. The trail winds in and out among the foot-hills, passing every now and then a sod hut or tepee of an Indian family. Fifty Indians are working on the roads in this part of the country to get them in excellent condition for the tour. The tenth day was spent in the Montana hills.

With a trip of 150 miles around the bench lands of the Rocky Mountain district, the Halladay pathfinder reached Great Falls from Havre, Mont., which comprised the eleventh day's journey.

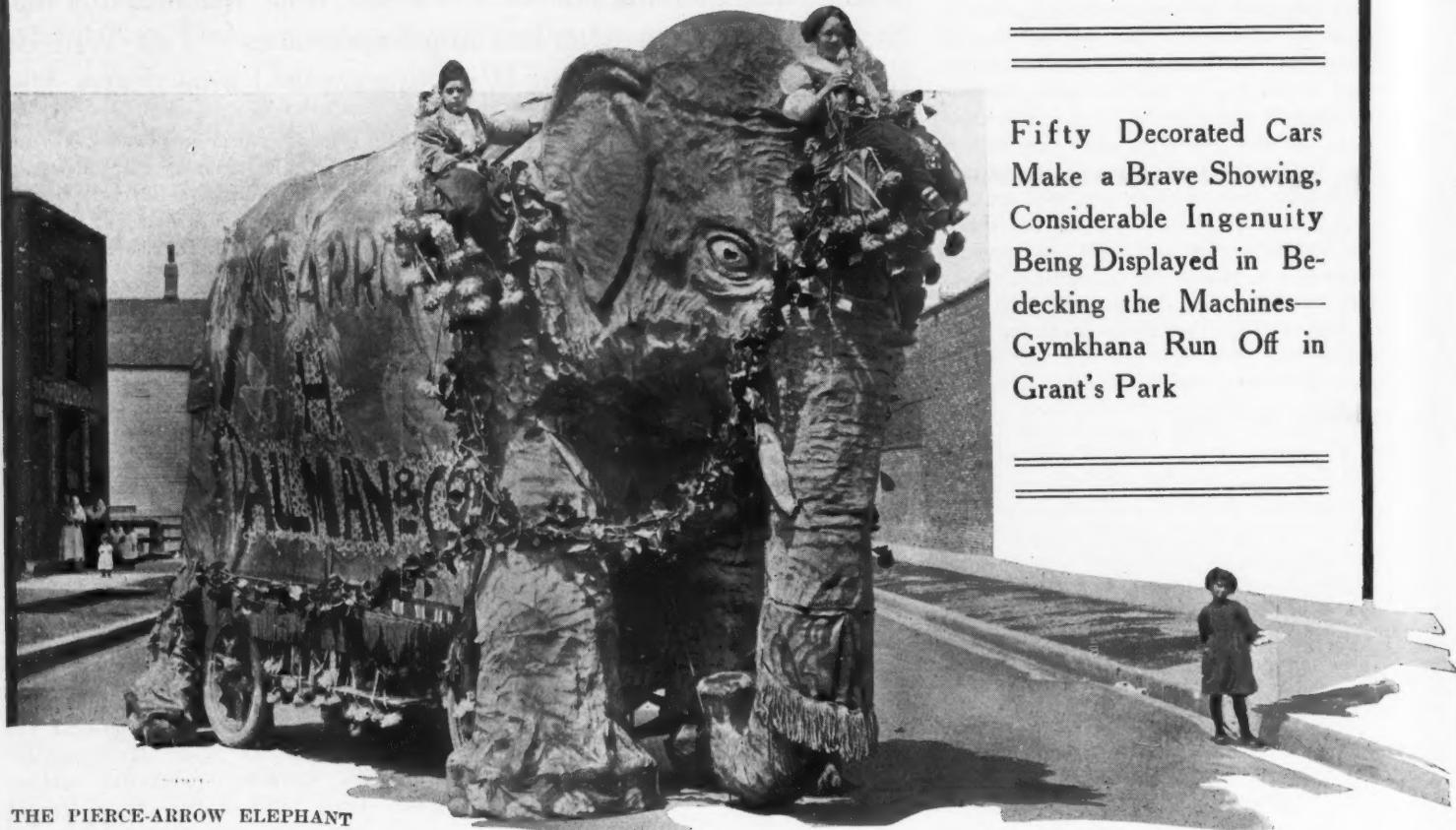
On the Last Leg

The last leg of the tour was made from Great Falls to Helena. The car left Great Falls at taking the road through St. Peter's Mission. Gradually climbing higher and higher into the mountains, they finally rounded a curve, coming into full view of the main range of the Rockies. The big barriers were not merely snowcapped, for recent snowfalls had filled the crevices and covered the sides of the mountains. This, the twelfth day's trip, was by far the best, having good roads all the way and the most wonderful scenery in the country.

Fully fifty cars are expected to be entered into the contest and many will go along as non-contestants. Entries from as far as New York, Massachusetts and several from Illinois have announced their intention of taking part in the run. The tour will start on or about July 20 from the Twin City.

Prizes and trophies galore have been announced to winners and presentation of these will be made upon the party arriving at the destination. Those already announced are for the car making the largest number of miles after the tour is ended to be presented by L. W. Hill; to the county having the best roads in the state of Minnesota by J. L. Sullwood; to the county having the best roads in South Dakota by Reuben Warner, president of the Minnesota State Automobile Association; best technical and road score by St. Paul Dispatch.

Chicago Holds Interesting Annual Floral Parade



THE PIERCE-ARROW ELEPHANT

CHICAGO, June 3—The Chicago Automobile Trade Association held its annual floral parade today, but like several other motoring events scheduled at this time it suffered because of its proximity to the 500-mile race at Indianapolis. Still, the local dealers made a most creditable display under the circumstances, turning out fifty decorated cars and trucks. It was a busy afternoon in the loop district, for in addition to the parade President Taft came to town, the parade of the work horses was held, and the Knights Templar had big doings at the ball park.

The parade itself followed the south and west side boulevard systems and finished at Grant park on the lake front, where a gymkhana was held on the big tract of land east of the Illinois Central tracks. The judges, cartoonists on the local papers, viewed the parade and then awarded first prize to the White Co., which had a car decorated in white paper chrysanthemums and representing an aeroplane. Second prize went to the Thomas B. Jeffrey Co., which had in a Rambler which carried a big white ram astraddle the hood, while a number of pretty young women occupied the tonneau of the car.

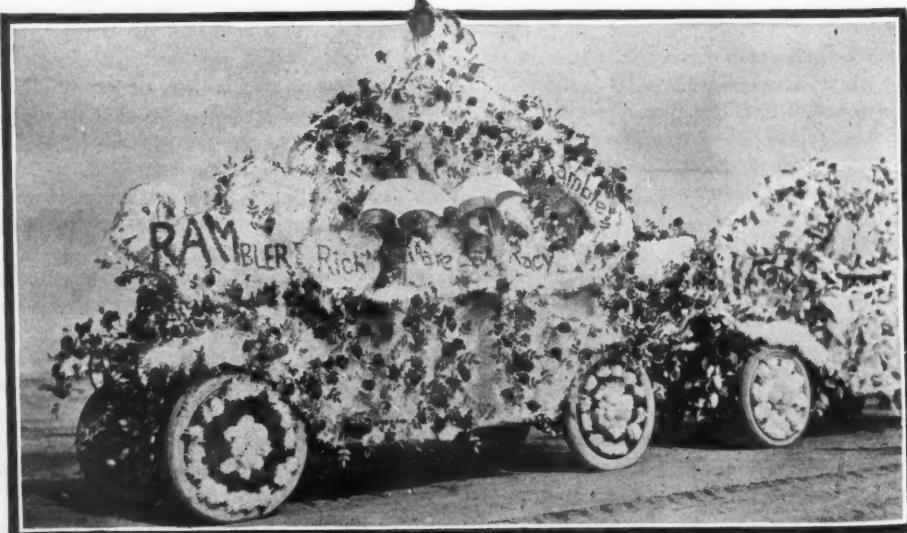
The McFarlan six entered by Mrs. C. A. Coey was awarded the prize for the best decorated car in natural flowers, the decorations consisting of a great quantity of pink peonies. In this division second prize went to an Oakland entered by

R. A. Wadsworth. In the owners' division the Stoddard-Dayton of H. G. Koenig caught the eye of the judges, who gave it first place in that section.

The prize for the most novel decorated float went to the Studebaker, which had an arbor on the truck, with cornucopias at each corner bearing little girls in white carrying tiny white parasols. The Elmore took second. Henry Paulman had a novelty in this section in the shape of a papier-mâché elephant, full size, which rambled along on a Pierce-Arrow. Unfortunately the elephant ran afoul of a

viaduct and was unable to finish. In the commercial section a White truck carrying a White touring car was considered best by the judges.

The gymkhana attracted only a small field of contestants. A feature was the 1,000-yard slow race on high gear for four-cylinder cars, which was won by A. J. Sternberg in an Oldsmobile in 1:49½. The same kind of a contest for six-cylinder cars was taken by a Thomas driven by Elmer Huber in 3:15, remarkably good time and the best of the afternoon. Driving between rows of barrels, perfect scores



RAMBLER, PRIZE-WINNER IN CHICAGO FLORAL PARADE

were made by Charles Van Sicklen, M. J. Lanahan and T. J. Hay in Fords, A. J. Sternberg in an Oldsmobile and Elmer Huber in a Thomas. Besides these events there were potato-spearing contests, backward racing and teeter board trials.

BIG TRUCK PARADE

Philadelphia, Pa., June 3—One hundred and fifty-six commercial vehicles, already entered, representing forty-five different makes and capable of carrying loads anywhere from 800 pounds to 6 tons, with every reason to believe that this total will be doubled at starting time, give a fair idea of the comprehensiveness of the motor truck parade and exhibit to be conducted here on Thursday by the Philadelphia Inquirer with the co-operation of the Philadelphia Automobile Trades Association. By far the greater number of the entries are of cars in active service, some few being demonstrating cars of dealers; in fact, after the procession through the city proper, many of the cars will return to their various fields of service.

PANHARD TOP-GEAR TEST

London, May 26—The Royal Automobile Club has issued its official report on the recent top-gear test of the Panhard-Knight car. The figures contain the following information:

Car Particulars—Weight of car front axle, 1,720 pounds; weight of car back axle, 1,577 pounds; total weight, 3,297 pounds; weight of load, 736 pounds; total running weight, 4,033 pounds.

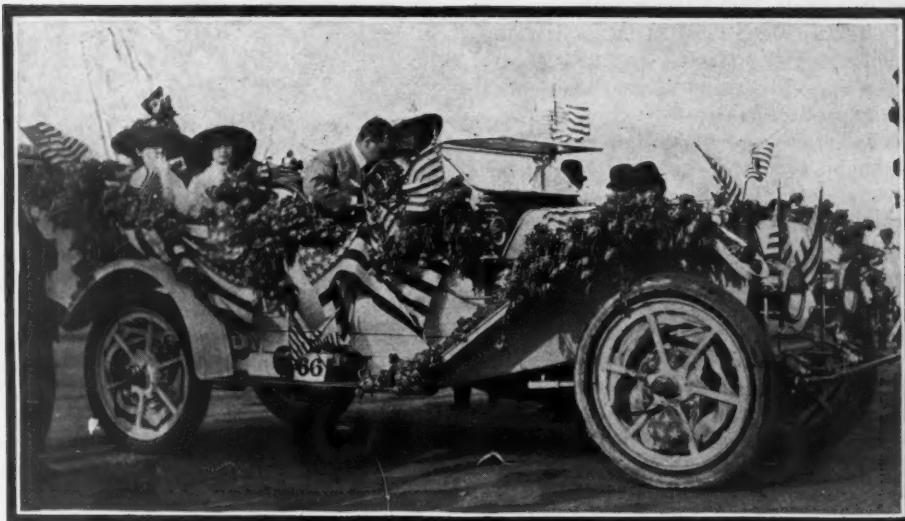
Road Performance—Gasoline consumed, 55.25 gallons; miles per gallon, 18.71; ton miles per gallon, 33.69.

On Brooklands' Track—Running weight, 4,033 pounds; distance, 13.824 miles; average speed, 58.4 miles per hour; fastest lap, 59.06 miles per hour.

On the official hill-climb the car averaged 14.09 miles per hour on an average grade of over 20 per cent. In the acceleration test the following performance is noted:

Ten miles per hour at 6.2 yards; 15 miles per hour at 18.9 yards; 20 miles per hour at 37.2 yards; 25 miles per hour at 65.8 yards; 30 miles per hour at 101.3 yards; 35 miles per hour at 158 yards.

This acceleration was made using the different gears in the gearbox. The fol-



MRS. C. A. COEY'S M'FARLAN, ONE OF CHICAGO'S PRIZE-WINNERS

lowing tabulation shows the acceleration using top gear only:

Ten miles per hour 13.9 yards; 15 miles per hour 34.8 yards; 20 miles per hour at 65.2 yards; 25 miles per hour at 106.8 yards; 30 miles per hour at 156.4 yards.

In all its tests the car used a gear ratio of 3.357 to 1. This is practically 3 1/3 to 1. As stated in last week's issue of Motor Age, this car made a complete top-gear run from London to Edinburgh and return, a distance of 1,034 miles, or an average speed of 19.6 miles per hour, carrying four passengers.

GOOD YEAR IN MASSACHUSETTS

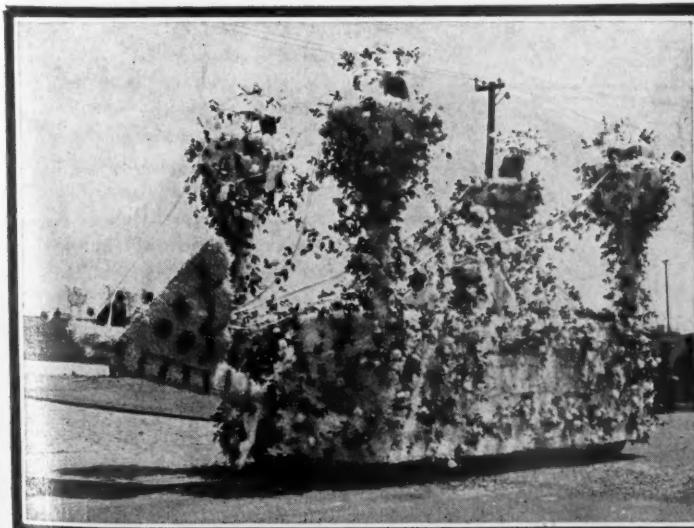
Boston, Mass., June 5—When the Massachusetts highway commission clerks went over their books June 1 and comparisons were made with the registration of motor cars a year ago it was found that the present year has so far very much surpassed last year. During the first 5 months of this year nearly 30,000 cars have been registered; to be exact, 29,358. The entire year of 1910 showed 31,313, so the difference is but about 2,000 cars. Some evidence of the growth of the industry is shown by the fact that in 1909

there were but 23,358 cars registered. The income from the motor industry is about 29 per cent greater this year than last, too.

It is interesting, also, to note the growth of the trade in the Bay State. There are 760 dealers and thirteen manufacturers registered in the state. This time last year showed 581 dealers and nine manufacturers, which is an increase of about 30 per cent. There have been about 30,000 licensed to operate motor vehicles, about two-thirds of whom are private operators and the other third chauffeurs. The commission's examiners have given about 2,500 examinations to persons desiring to get operator's licenses this year. The following figures show the comparison between this year and the corresponding period in 1910:

	June 1, 1911	June 1, 1910
Fees	\$367,073.25	\$285,023.86
Motor cars	29,358	23,383
Motor cycles	2,475	2,380
Dealers, motor cars	760	581
Dealers, motor cycles	13	9
Operators	4,649	4,453
Operators, renewals	19,080	17,171
Chauffeurs	1,673	1,537
Chauffeurs, renewals	4,781	3,641
Examinations	2,508	2,253

* Of this number 1,372 cars are commercial. In 1910 commercial cars were not classified.



STUDEBAKER FLOAT AND WHITE AEROPLANE IN CHICAGO PARADE

A FAIR DEAL FOR PURCHASER

SOUTH BRAINTREE, MASS.—Editor Motor Age—I agree with L. Becker, of Knoxville, Ill., whose communication appeared in Motor Age, issue April 27, pages 22 and 23, when he complains that the purchaser should have a fair deal as well as the dealer. I cannot see where the dealers or manufacturers have a kick to register as long as they are able to overcharge for parts to the buyer.

A short time ago I sent to the factory of a well-known maker of motor cars for two spiral springs; each were $2\frac{1}{4}$ inches long and made of wire about the size of a eight-penny wire nail. The factory charged me \$1 for the springs, including 8 cents for postage. I afterwards found that I could have purchased the springs in Boston for 10 cents, or 2 cents an inch. I, like Mr. Becker, have learned my lesson and shall profit from it hereafter. I hope every owner who reads this will also profit by the experience of Mr. Becker and myself.—S. Prince.

STOPPING A SPINNING CLUTCH

Weston, Ill.—Editor Motor Age—I have a 1910 model 17 Buick and desire to put on a brake of some kind to check the clutch from spinning, which would assist in changing gears. Can Motor Age give me some idea as to the form and how it could be put on?—R. J. Stewart.

In Fig. 1 are shown three methods employed by some manufacturers of stopping the clutches from spinning. The device at the left consists of a fiber disk arranged on the end of a plunger which is slidably mounted in a guide with a spring behind it. When the clutch F is drawn away from the flywheel, the edge of it is brought into contact with the fiber disk, which has the desired braking action upon it. The same principle is employed in the design shown at the right. A little arm with a fiber disk A on the end of it, is adjustably mounted on the bar that operates the clutch; so that as the clutch is released from the flywheel, the disk is made to bear upon the edge of the clutch. The central illustration shows a means whereby the spinning of either a cone or multiple-disk clutch may be retarded without applying

The Readers'

the brake directly to the clutch. A round metal flange F1 is secured to the shaft or universal joint housing between the clutch and gearset, a piece of flexible band-iron B bent into the shape illustrated and with a fiber plate P on the lower end of it, is secured to the cross-member of the frame. A bent rod R connected to the clutch operating mechanism automatically brings the fiber friction plate P into contact with the flange F1 when the clutch is released. A spring S is fitted between the end of the rod and the band-iron strip B so that the necessary flexibility is obtained.

HAS IGNITION TROUBLE

New Richmond, Wis.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—I have a four-cylinder Ford car and am using a 65-cent grade of oil in the crankcase. I have been using a 35-cent oil. Which does Motor Age think is the cheaper to use?

2—My engine fires perfectly when the spark is retarded, but when I advance the spark it misfires and does not seem to have the power it should. What is the cause of this?

3—Is the Holley carburetor as good as the Kingston on a Ford car?

4—What spark plug works the best in a Ford car?

5—Does it do any harm to have the high-speed clutch a little too tight?—T. C. Minier.

1—If you are purchasing your oil from a reputable dealer and maker, the 65-cent grade is by all means desirable and should be the cheapest in the long run.

2—Your trouble most probably is due to the fact that the ignition is already set too far in advance. If this is the case there is danger of a back kick in starting the motor. To reset your timing or to test it, get one of the cylinders $\frac{1}{4}$ -inch past the firing center, then set the revolving

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

segment of the commutator so that a spark occurs at the plug with the control lever fully retarded. With the ignition too far advanced preignition takes place and much of the power developed by the explosion is applied to the head of the piston while it is still coming up on the compression stroke instead of going downward on the explosion stroke.

3—Motor Age has no figures on comparative tests of the two carburetors mentioned.

4—Questions of this kind are not considered pertinent ones for these columns. It is not the policy of Motor Age to recommend one make of plug over another.

5—The only harm that comes in having any clutch too tight is that it requires more energy to engage and disengage it, and the wear and tear on the clutch-operating mechanism consequently is greater than would be the case if properly adjusted.

QUESTION OF COUNTERBALANCE

Philadelphia, Pa.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions?

1—How does one determine the correct amount of counterbalance to use on a vertical, one-cylinder, 4 by 4-inch, four-cycle motor with enclosed flywheels?

2—Does the same formula apply to a horizontal engine? If not, kindly tell me this also.

3—I would like to know who makes a 2-horsepower direct-connected gas engine and dynamo for charging vehicle batteries. The motor has "Meriam motor" on the crank-case.—H. V. Durkee.

1—You would have to figure out the uncompensated forces in the motor. The amount of these would depend upon the weights of piston, connecting rod and crank, as well as the length of the connecting rod and the distribution of weight in it. The crank throw would have to be considered, as would also the speed of the motor and the compression and explosion pressures. The forces due to the mass and speed of the reciprocating parts are in part balanced by the combined masses of the flywheels. No one definite formula would cover the calculations satisfactorily, for much the same reasons as those outlined in the reply to X, under the heading of "Goes Into Design," published in this issue. Motor Age would suggest that you consult the references mentioned in that

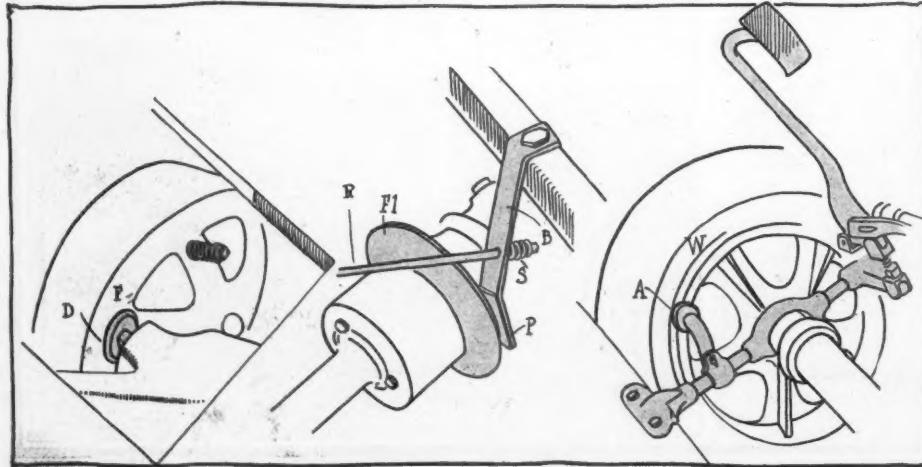


FIG. 1—THREE ARRANGEMENTS FOR STOPPING SPINNING CLUTCHES

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

answer.

2—The position of the cylinder would have little effect on the balancing.

3—Motor Age has been unable to locate the maker of the outfit to which you refer.

NEW LININGS NEEDED

Laings, Tex.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions?

1—What causes a model T Ford to jump or jerk when starting? There is plenty of oil in the case, apparently.

2—What causes a racket in the front of the engine on the fan. It sounds as if one of the fan blades was hitting some object?—Claud Reems.

1—The tendency to jump and jerk when starting is due to the linings of the transmission bands having become worn and hard. The bands should be relined and new linings can be obtained of any Ford agent.

2—If the fan blades are not hitting anything as they revolve, it is possible that one of the blades has worked loose.

GOES INTO DESIGN

St. Joseph, Mo.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions?

1—How can I figure the sizes of the crankshaft bearings, crank pins and crank webs of a four-cylinder, four-cycle motor car engine?

2—Give me a formula which takes into consideration the number of cylinders and also the kind of steel, either alloy or carbon.

3—Is there a book published on design which gives this and other necessary formulas?

4—How is the weight of the flywheel of motor car engines figured?—X.

Any answer to these questions which would be at all valuable would require much more space than may be devoted to them. The design of motor parts involves many considerations not at first apparent. For instance, in addition to the chemical composition of the steel as you mention, there must be taken into consideration such factors as the speed of the engine, the compression pressure, the ratio of bore to stroke, and many others. Any of the books treating of the design of gas engines will probably give you the information you require. One of these is "The Practical Design of Motor Cars,"

by Gunn, published by Longmans, Green & Co., New York. Another, in more condensed form, is Roberts' "Gas Engine Handbook," published by the Gas Engine Publishing Co., Cincinnati, O.

UNISPARKER ON BUICK

Chipley, Fla.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me whether or not I can successfully use an Atwater Kent ignition system on my model 10 Buick? I have a system of this kind and want to use it if possible. Kindly give me a correct wiring diagram for same, if it is possible to use it on my car.—A. I. Miller.

The Atwater Kent unisparker can be installed on the model 10 Buick without the necessity of any special arrangements. No special gears or brackets are required, the unisparker being installed directly on the timer shaft.

The connections are shown in Fig. 2. This wiring diagram will apply to any four-cylinder motor.

THE TESTER'S JOB

Virden, Ill.—Editor Motor Age—Will Motor Age please answer through the Readers' Clearing House the following questions?

1—Do factories take on more road testers in the spring?

2—What are the requirements of road testers?

3—Salary?

4—Do road testers have to have large experience?

5—Do testers have to give references?

6—Does Motor Age think a boy of 18 years, who has had a great deal of driving experience, could get a position as tester in some factory?—Subscriber.

1—Factories do not as a rule take on road testers in the spring. The road tester in most factories is kept quite busy all the year round.

2—The requirements of a road tester differ in various factories. In some only

a fair knowledge of the mechanical construction and operation of the car, and a strong pull with the management is required. In most factories testers are employed on the strength of their reputations or record of past experiences, or work up through the ranks.

3—The salary averages about \$20 per week.

4—Experience is not absolutely necessary, for the troubles characteristic of certain makes of cars may be very quickly learned by a bright young driver, and there generally is a head-tester in charge of the testing crew through whose hands the car must pass before it is allowed to go to the finishing departments. In most cases, however, it is difficult to secure a tester's position unless experienced.

5—References generally are required.

6—Yes.

ASKS ABOUT AIRLESS TREAD

Chase, Kas.—Editor Motor Age—I have owned a couple of motor cars and have found the pleasures and uses many. Motor cars of today are practically trouble-proof with the exception of the pneumatic tires, and they surely are the weak part. Not from point of wear, as it is astonishing the mileage a good casing gives, but from punctures, blowouts, etc., and the consequent nervous strain on the driver of such. In many motor car publications one sees advertised inner shoes, outer treads, and most everything else to eliminate tire troubles and they are effective to a certain degree, but the fact stands out big and plain that they do not eliminate. I am not sure that it is allowable in a trade paper, but I would like to see some communications in these columns from actual users, first-hand experience on country roads and touring with some of the airless treads now in use.

I have heard objections to the effect that they are heavy and cause excessive vibration, but a pneumatic pumped up to standard is not very pleasant riding unless you have it loaded close to the limit. This idea of getting out in the hot, dusty road with your Sunday-go-to-meeting clothes on and repairing a puncture or blowout is not very pleasant, or running in

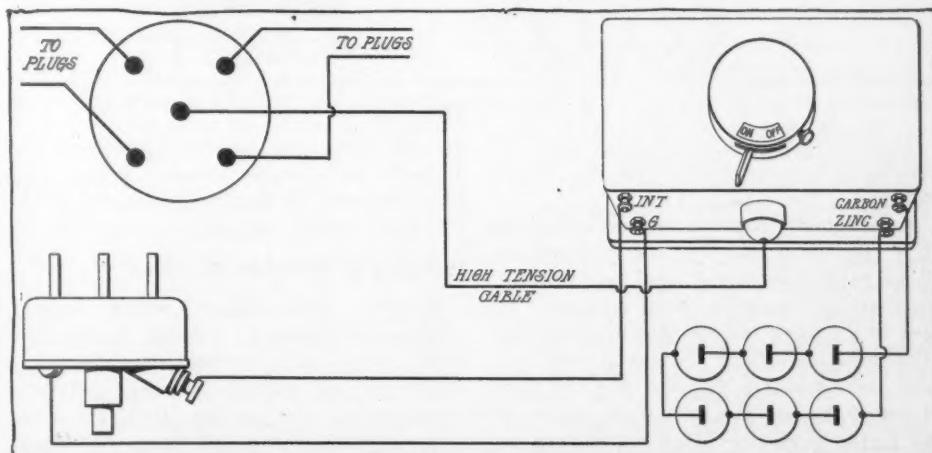


FIG. 2—WIRING DIAGRAM OF UNISPARKER FOR FOUR-CYLINDER CAR

on the rim or carrying an extra casing, which is costly. Let us have some light. Fred L. Willard.

TYPES OF RADIATORS

San Diego, Calif.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions?

1—What is a honeycomb radiator?

2—What is a cellular radiator?

3—What is a tubular radiator?

4—Have any of the 1911 Overland models honeycomb radiators? I understood it was a tubular radiator with a screen to give it the appearance of a honeycomb.

5—What is considered the best material for bearings on a high-speed engine?—J. C. Webster.

1—A honeycomb radiator is a term applied to a cellular type of radiator, therefore one has the option of calling a cellular type of radiator a honeycomb type.

2—A cellular radiator is one comprised of a large number of individual air cells, any one of which may be removed and replaced by another in case of leakage. In a cellular radiator the air cells may be entirely surrounded by water when the radiator is in operation and the course of the water circulation through the radiator is not confined to any definite horizontal, ver-

construction. Several tubular radiator constructions are shown in Fig. 4. It will be noticed that many of these have the true honeycomb appearance.

4—The radiators of the 1911 Overland cars are of the tubular type, with a screen in front to give them the cellular appearance.

5—Bronze bushings generally lined with babbitt or some similar white metal seem to be the best practice at the present time.

REMOVE THE FLYWHEEL

Mayville, N. D.—Editor Motor Age—Kindly answer the following questions through the Readers' Clearing House:

1—How does one get at the screws which hold the permanent magnets in the Ford model T magnets, when the engine is out and the base removed?

2—What is the difference between the Bergdoll 30 and the Chalmers 30? They look very much alike, have the same engine, transmission, etc. I understand the parts are made by the Chalmers company. Is this so?—A Subscriber.

1—First remove the flywheel, which is held by four bolts, and then the screws which hold the magnets in place can readily be reached with a screwdriver.

2—As far as the specifications are con-

The sound of the exhaust should be the same from all four cylinders. If two of the reports are unnaturally loud there is a possibility of weak gaskets in the exhaust manifolds. If the other two reports are softer than is to be expected, you will probably notice that there is a loss of power. This effect may be produced by badly set exhaust or admission valves, poor ignition or excessive carbon in the weak cylinders. Compression leaks past the pistons may be to blame. An air leak in the intake manifold of two of the cylinders, or, in fact, any condition that would tend to produce poor explosions in two of the cylinders would cause this effect.

In some motors the arrangement of the exhaust manifold with relation to the cut-out is such that there is a very slight difference in the sound, but it is never sufficient to be characterized as loud and dull.

MIGHT BE SEVERAL THINGS

Pullman, Wash.—Editor Motor Age—Will Motor Age through the Readers' Clearing House tell me the remedy for the following trouble? I have a 45-horsepower Stoddard-Dayton car, 1909 model. This type of engine has the overhead valves. The difficulty is that the engine runs unsteadily when pulling a light load; for instance, when running up a slight grade

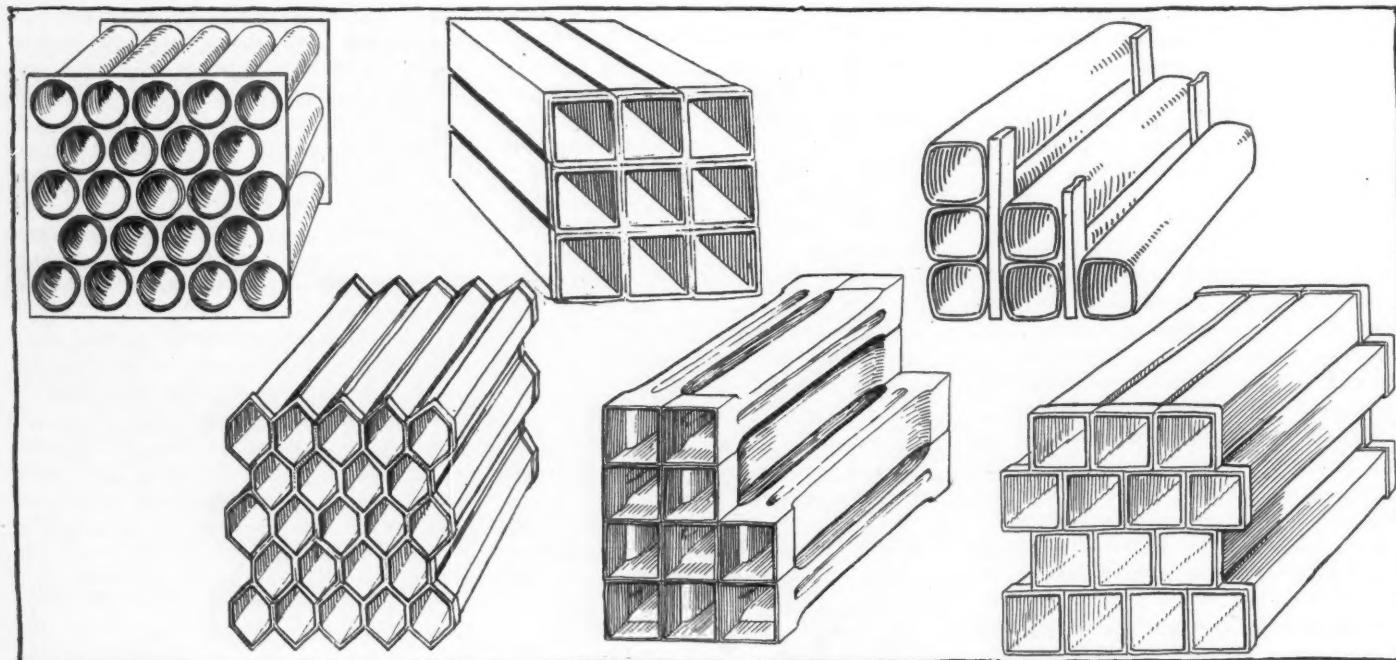


FIG. 3—SEVERAL TYPES OF CELLULAR OR HONEYCOMB RADIATORS

tical or angular course. Several types of cellular radiator constructions are shown in Fig. 3.

3—A tubular radiator is one comprised of a series of tubular water passages. These tubular passages may be arranged horizontally, vertically, or at an angle; or bent in a zig-zag fashion that brings about a combination of the horizontal and vertical, or oppositely disposed angular flow of water through the tubes; the object of the latter generally being to imitate or bring about the appearance of the cellular

construction. There is no difference between the Bergdoll and Chalmers cars. Motor Age is not aware that Bergdoll parts are made by the Chalmers company.

EXHAUSTS SHOULD BE ALIKE

Wichita, Kan.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following: Should all four exhausts on a four-cylinder motor be as loud as the other, not two loud reports and two dull ones, and what would cause this?—A Subscriber.

on a smooth city street the car seems to lunge about every time the driving wheels make one revolution. It acts as if one cylinder were stronger or weaker than the rest. At higher speeds the trouble cannot be distinguished. There also is a clicking noise made by the valves of one cylinder. How could this be stopped? The above are all noticeable at low speeds on smooth streets. At higher speeds there is an engine knock. It is on one cylinder only, and only happens on a pull.

I have set up the crankshaft connecting

rod bearings, but that does not help. I have had three men who presumably knew their business look at the car, and though they have worked on it they have not helped it any. The valves are timed to a fineness and under no load the engine runs like new. Could a carbon deposit in the cylinders be the cause of any of the above? The engine does not heat. I have driven cars for 5 years but I am at a loss to know what to do to remedy the unsteady speed. The ignition is good and the exhaust never misses and there seems to be

in case of a leak it will run through between the seats.

Your trouble also might be caused by an air leak between the seat of the valve cage and the cylinder. A new gasket should remedy this. It also is possible that there is a leak at one of the intake pipe connections which admits a little air into the mixture, causing either the misfiring or weak explosions. If all the valves are properly adjusted for clearance, the clicking of one on the stem may be due to a worn valve guide. If the worn

with clean water. Motor Age has no records of the use of wood alcohol for this purpose. Some of the compounds advertised for removing scale from steam boilers have given good service in many cases.

CLEANING CAR PARTS

Benson, Mo.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—Kindly give a recipe for removing old grease from motor car parts to be used in a large truck.

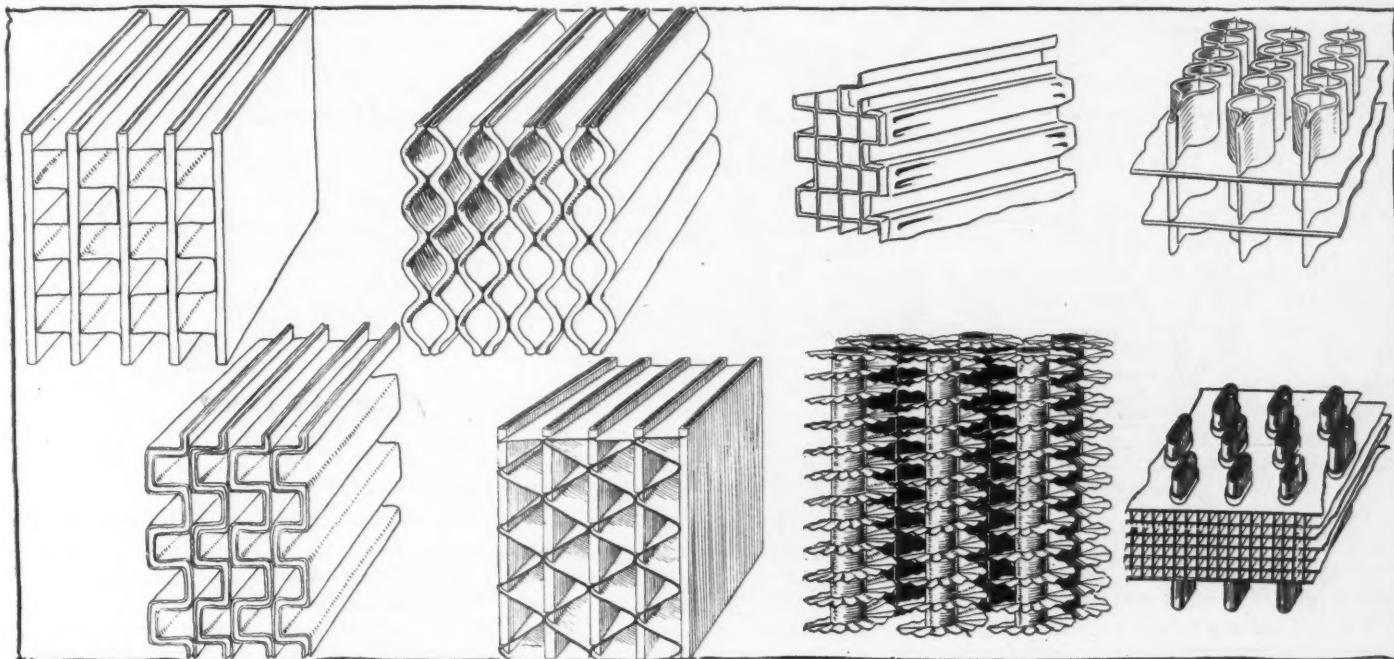


FIG. 4—SOME OF THE DIFFERENT FORMS OF TUBULAR RADIATORS

no variation in the strength of each exhaust.—Gordon Klemgard.

Your trouble may be due either to poor compression in one cylinder, to a warped valve, ill-fitting piston rings, or too fine an adjustment between a rocker arm and valve-stem. A carbon deposit might be the cause of the knock, though it also is possible that one of the main bearings of the crankshaft is loose. The compression can be tested by cranking the motor over slowly and noting carefully if any one cylinder is weaker than the rest. Should one of the cylinders be weaker, place a sheet of newspaper between the end of the valve stem and the rocker arm of each valve, one at a time, while the motor is warm, and see if the paper can be moved about freely throughout the compression stroke; if not, a little more clearance may eliminate the trouble.

If the clearance is sufficient, and the compression is still weak, examine the valves and test them to see that they seat properly. To do this remove the valves and valve-cages from the cylinder and hold them up to the light so that should the valves seat improperly, light will shine through between the valve seats; or another method is to hold the valve by the stem and pour gasoline around the inside of the cage opposite the seat, so that

guide is on an inlet valve, this also might permit sufficient air to get into the mixture to spoil it and cause the weak explosions or misfiring that brings about the jerky action of the car. Should it be necessary to fit new piston rings, or if the above information fails to aid you, it would be advisable to write John Edwards of the Dayton Motor Car Co., Dayton, Ohio, and learn from him the location of the nearest Stoddard-Dayton agency, from which one of the regular Stoddard-Dayton company's journeyman repairmen might be sent to rectify your trouble.

RADIATOR CLEANERS

Chicago—Editor Motor Age—Please advise me through the Readers' Clearing House columns as to the respective merits of wood alcohol and caustic soda for cleaning clogged water circulation. I should also like to know of any other effective remedies for this trouble.—R. M. Crow.

The most generally accepted method, and the one that seems to give the best results in cleaning radiators, is to dissolve 2 pounds of crystals of soda to each gallon of water needed in the cooling system. Pour this solution into the radiator, run the motor a few minutes, and allow it to stand over night. In the morning drain out the system, flush it out, and fill up

2—Give a rule and formula for drawing gear teeth on differential gears.

3—Give a good formula for brass polish.

4—Can motor car designing be successfully learned through correspondence?

5—Would a removable core or wall in a motor car cylinder be of any advantage? Has such ever been patented?—Rex.

1—This depends upon what parts are to be cleaned and their condition. Smaller parts may be cleaned by soaking in kerosene or gasoline and the larger ones should be washed in lye water. If the grease is caked the most of it can be scraped off.

2—This was covered in the Readers' Clearing House for May 11, 1911.

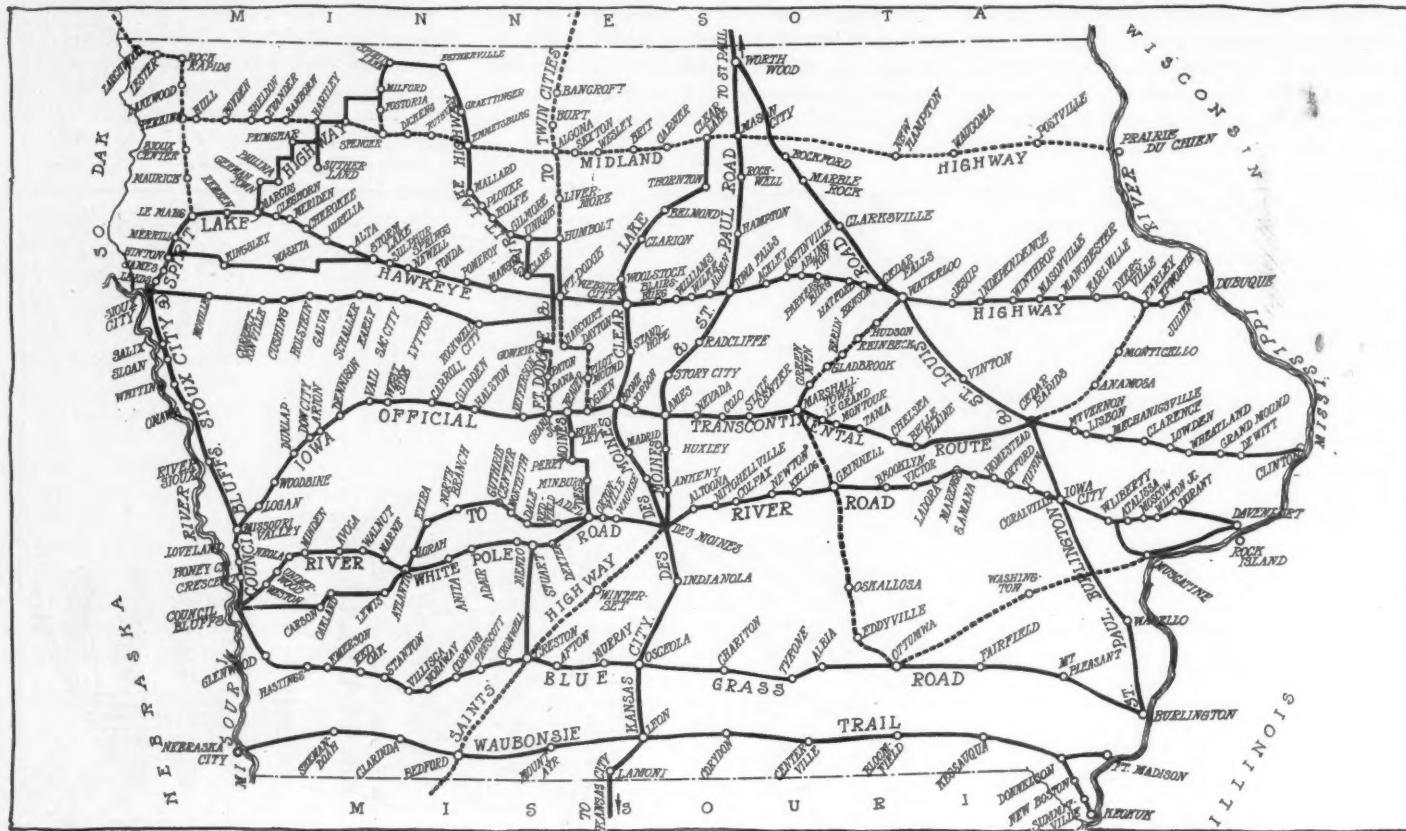
3—A recipe for a home-made brass polish was given in the Readers' Clearing House for March 2, 1911, page 38.

4—This all depends on the man. While a course at a residence school is to be advised where possible, a good grounding in the theory of the subject can be obtained by home study. If you are so situated that you have access to a factory where you can work at the actual construction and get the first-hand knowledge along with the book learning, the value of such a course is much enhanced.

5—As you do not state the purpose, kind or location of the core or wall in question, this would be difficult to answer.



Routes and Touring



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IOWA'S TRANS-STATE HIGHWAYS

The state of Iowa has taken the lead in road improvement. There are six distinct river-to-river roads by which the motorist may tour across the state. The cross-state roads are all marked with road signs at frequent intervals. These are interconnected by a network of improved links that are kept in first-class condition by dragging. The more important roads are the Waubonsie trail, the River-to-River road and Hawkeye highway.

ROUTE TO SPIRIT LAKE, IOWA

ALTON, ILL.—Editor Motor Age—Will Motor Age let me know the best way to motor from Alton, Ill., to Spirit Lake, Iowa?—J. M. Ryrie.

Motor Age can route you two different ways from St. Louis, the first part of neither of them being very good. By way of Springfield, you will travel over unimproved prairie roads and up to Alexandria on the west side of the Mississippi over the usual Missouri roads. The route from St. Louis to Alexandria, Mo., can be found in the communication headed "Missouri Route" but will have to be followed in the reverse direction. Keokuk, Ia., is the next town and you now follow the Waubonsie trail through Summitville, and New Boston to Donnelson, then due north to Mt. Pleasant which is on a dragged dirt road called the Blue Grass road. Go west on the Blue Grass road through Fairfield, Ottumwa, Albia, Tyrone and Chariton.

This Blue Grass road is marked with blue and white bands on all telephone poles and you will not have any difficulty on this stretch. From Chariton go north to Indianola and follow on the Interstate

trail into Des Moines. The Automobile Blue Book route from Des Moines to Ft. Dodge can now be followed through Polk City, Madrid, Boone, Ogden, Beaver, Grand Junction, Dana, Paton, Gowrie, Ft. Dodge, Manson, Pomeroy, Fonda, Newell, Storm Lake, Rembrandt, Sioux Rapids, Cornell, Spencer, Fostoria, and Milford to Spirit Lake. Further information of value may be secured from the Iowa Publishing Co. of Des Moines, which has supplied Motor Age with the greater part of this route.

Traveling through Illinois from St. Louis via Springfield, Peoria, Galesburg and Davenport takes you over a Blue Book route, through Collinsville, Marysville, Edwardsville, Worden, Staunton, Mount Olive, Litchfield, Springfield, Middletown, Delavan, Dillon, Peoria, Farmington, Maquon, Knoxville, Galesburg, Henderson, Alpha, New Windsor, Rock Island and Davenport. At Davenport you strike the River-to-River road and pass through Walcott, Durant, Wilton, Moscow, Atalissa, West Liberty, Iowa City, Tiffin, Oxford, Homestead, Marengo, Ladora, Brooklyn, Grinnell, Kellogg, Newton, Colfax, Mitchellville, and Altoona to Des Moines and then

follow the route outlined above from there to Spirit Lake.

Another way might be to travel on the Missouri side of the Mississippi to Hannibal and ferry across into Illinois to Quincy where you follow the Blue Book route through Ursula, Mendon, Loraine, Chili, Bowen, Augusta, Plymouth, Tennessee, Colchester, Macomb, Bushnell, Prairie City, Avon, St. Augustine, and Abingdon to Galesburg.

OFFICIAL ROUTE TO SPIRIT LAKE

Sioux City, Ia.—Editor Motor Age—The following official route was adopted from Le Mars to Spirit Lake: Le Mars, Remsen, Marcus, Germantown, Paulina, Primghar, Hartley, Milford, Arnold Park, Spirit Lake. The route from Sioux City to Marcus traverses the Hawkeye highway route. The route south to Council Bluffs and Omaha follows a natural level highway south from Sioux City to River Sioux, Harrison county.

From the Sioux river a divergence is made to the east, following the foothills into Missouri Valley. From Missouri Valley the highway goes through Loveland, Honey Creek, Crescent and Council Bluffs.

Information

There is not a hill on the entire route, with the exception of the approaches to and the streets of the cities of Sioux City and Missouri Valley. The rest of the entire route being high level, or slightly rolling prairie land, through the most fertile section of the United States. It is determined to make this route a boulevard and at present the natural roads are exceptionally good.—C. A. Kneedler.

MARKING TRANSCONTINENTAL ROUTE

Illustrated on this page is a telephone pole with a white band and the sign beneath it used to mark the transcontinental route across Iowa. The method of marking the posts consists in the addition of a 6-inch block letter T to the white stripe already in place. This will distinguish this route from other roads or cross-roads which use the white band without the letter. Five hundred official signs will be used on this route between Council Bluffs and Clinton, making two signs for every mile.

TO DETROIT FROM ATCHISON, KANS.

Atchison, Kans.—Editor Motor Age—Kindly tell me through the Routes and Touring Information department the best route to travel from Atchison, Kans., to



SIGN BOARD ON OFFICIAL TRANSCONTINENTAL ROUTE ACROSS IOWA
Telephone poles are used as tour signposts

Detroit, Mich., during the months of June and July.—A Subscriber.

This route as far as South Bend, Ind., is completely outlined in the communication headed "Texas to New York," page 22. From South Bend, follow the Blue Book route, which is as follows: South Bend, Niles, Summerville, Pokagon, Dowagiac, Decatur, Paw Paw, Kalamazoo, Battle Creek, Marshall, Albion, Parma, Jackson, Chelsea, Ann Arbor, Ypsilanti, Wayne, Dearborn to Detroit. You will find this route somewhat longer than the one via Elkhart and Coldwater, but on the whole is to be preferred unless it is desired to make a particularly quick trip.

The alternate route through Elkhart is via Mishawaka, Elkhart, Middlebury, Lima, Coldwater, Jonesville, Somerset Corner, Clinton, Ypsilanti, Detroit. You are referred to the Blue Book, which will give you complete running directions and much other valuable information covering the entire trip. See map on page 20 for the different Iowa cross state routes.

FROM DES MOINES TO CHICAGO

St. Joseph, Mo.—Will Motor Age kindly publish the best route from Des Moines, Ia., to Chicago? Can I use the White Pole

BAGGAGE—HOW TO CARRY IT WITH COMFORT ON A MOTOR TOUR

CHICAGO—Editor Motor Age—The biggest mistake you can make in starting out on a tour of 1 or 2 weeks is to take too much baggage along. Too much baggage is the biggest kind of a nuisance. First it weighs down the car, is harder on the tires, and if the baggage is carried back of the tonneau it makes the car harder to steer. A party of four can travel very well with but two dress suitcases. If you have not a trunk on the back of your car carry the suitcases on the front of the tonneau just back of the front seat. Back of the front seat is the ideal place to carry baggage, being near the center of the car, where it does not interfere with the riding of the machine. In an ordinary fore-door touring car there is plenty of room for two suitcases in this position.

Before starting on the tour get a rug—it will cost \$1 or \$1.50—to hang over the coat rail on the back of the front seat and reach down to the car floor, so that the suitcases will not scratch the paint on the back of the seat. Besides this do not start out without a strap by which the suitcases can be kept in place, otherwise they will get out of position and be falling on the feet of the rear seat or tonneau passengers. An ordinary strap about 5 feet long and 1 1/2 inches wide will do. It should have a buckle on each end. Buckle one end around the robe rail and then run the strap through the handles of the suitcases and buckle the other end around the foot rail of the tonneau. This is a simple arrangement but will make the trip a comfort from start to finish so far as the baggage is concerned.

Rain coats and overcoats always should be carried over the robe rail on the back of the front seat. Put the overcoats on first. Fold them neatly and hang them over the rail before the baggage, that is the suitcases, is put in place. Fold the raincoats and lay them over the overcoats, sweaters and whatever other coats are needed. With these coats in place, place the suitcases against them so that with the wind and air currents the rain coats cannot flop out of position. There is nothing more annoying to a tonneau passenger than to have the tail or arm of a raincoat flapping in his face with the car running 25 or 30 miles per hour.

With women tourists it is a great mistake not to carry the veils and goggles and extra gloves in the door pockets. Many start out with these necessities in the pockets of the coats and hang the coats on the robe rail. When goggles are needed it upsets all of the coats to reach the pockets where the goggles are stored. The same applies to gloves, veils, etc. It is one of the disturbing features of a tour to have the baggage upset before 10 miles have been covered in order to get a different pair of gloves or another pair of goggles.

Many drivers are nightmares to the other passengers, because they do not use any judgment in arranging the tour in these little respects. They have hardly started until matches are needed, and perhaps they are in an overcoat pocket that is snugly stowed away. Then the goggles are in some other out-of-the-way place and more disturbing of baggage is necessary. Before getting into a car for a day's tour each passenger should go over in his or her mind every thing that might be needed in case of a sudden rain or any other incidental stop, and these necessities should be placed where they can be conveniently reached without disturbing the main baggage.—Tourist.

route or the river-to-river route through Iowa? What is the approximate distance from Des Moines to Chicago, also the distance from Chicago to New York?—E. C. Maxwell.

From Des Moines, Ia., to Chicago, follow the river-to-river route, as outlined in the Iowa state route map on page 20 of this issue, as far as Davenport. From this point to Chicago follow the Blue Book route through Moline, Hillsdale, Erie, Lyndon, Sterling, Dixon, Ashton, Rochelle, DeKalb, Geneva, Lombard, Chicago. The White Pole route you speak of is the western half of the river-to-river route and runs from Omaha east to Des Moines, Ia. Approximate distance, Des Moines to Chicago, 360 miles. Approximate total distance Chicago to New York is 1,000 miles.

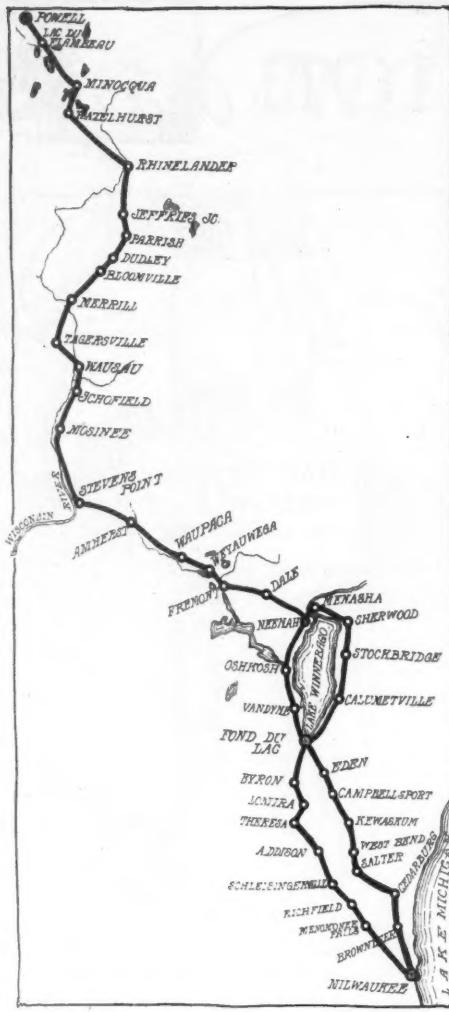
TEXAS TO NEW YORK

Abilene, Texas—Editor Motor Age—I am contemplating a journey from here to my summer home at Rochester, N. Y., in my car. I want to know the best route, probable time and what arrangements are necessary to traverse the various states. I am registered here, having paid a fee for same, and am advised by New York authorities that this will exempt me as a transient from further dues in that state. Am ignorant of requirements in the other states likely to be crossed.—C. H. Lewis.

From Abilene to Fort Worth, Tex., Motor Age suggests that you follow the route as traversed by the Ohio pathfinder car in laying out the southern transcontinental route, which passes through Hamby, Albany Station, Breckeridge, Palo Pinto, Mineral Wells, Weatherford, Annetta, Aledo, Ben Brook and Fort Worth. From Fort Worth to Oklahoma City—the Glidden tour route of 1910—go through Saginaw, Hicks, Decatur, Fruitland, Bowie, Ringgold, Ryan, Waurika, Temple, Lawton, Rohrer, Anadarko, Verden, Chickasha, El Reno, Yukon, and Oklahoma City. A map and outline of this portion of the route was published in Motor Age, issue May 25, page 22.

Leaving Oklahoma City for Wichita, Kans., via the Glidden tour route of 1910, the towns passed through are Britton, Edmond, Guthrie, Orlando, Enid, Medford, Renfrow, Caldwell, Kas., South Haven, Riverdale, Wichita. Continue on to Newton, thence via Elbing, Peabody, Florence, Cottonwood Falls, Emporia, Waverly, Ottawa, Gardner, Olathe, Shawnee, Kansas City, Wallula, Leavenworth, Atchison, Halls, St. Joseph, Maryville, Wilcox, Tarkio and Shenandoah. At this point you strike the Waubonsie trail, which crosses the extreme southern portion of Iowa, its eastern terminal being Keokuk or Fort Madison.

The pleasure of a trip over the Waubonsie trail undoubtedly will be enhanced by calling on Henry Field, a member of the Waubonsie Association, at Shenandoah, Ia., who will furnish you with valuable information relative to the trip



FROM MILWAUKEE TO POWELL, WIS.

across this section of Iowa. From Fort Madison go direct to Bushnell, Prairie City, Avon, Abingdon, Galesburg; thence to Chicago by the Blue Book route, which is through Galva, Kewanee, Sheffield, Princeton, Le Moille, Mendota, Somonauk, Sandwich, Plano, Bristol Station, Montgomery, Aurora, Naperville and Downers Grove to Chicago. From Chicago to Rochester, see the route outlined below.

Should you prefer to continue to Council Bluffs from Shenandoah instead of following the Waubonsie trail, go on north through Randolph, Tabor, Glenwood and Council Bluffs. At this point you have the choice of several Iowa river-to-river routes, as shown in the map herewith. The original river-to-river route brings you to Davenport, its eastern terminal, thence proceed east through Moline, Hillsdale, Erie, Sterling, Dixon, Ashton, Rochelle, Creston, DeKalb, Geneva, Lombard, Chicago. Should you decide to cross Iowa by the transcontinental route with its eastern terminal at Clinton, then proceed east by the Blue Book route via Lyons, Fulton, Morrison to Sterling, continuing on to Chicago as outlined in the route from Davenport, Iowa.

The Chicago-Rochester portion of the route goes through Hammond, Highlands, Hobart, Valparaiso, Westville, La Porte,

South Bend, Mishawaka, Goshen, Ligonier, Brimfield, Kendallville, Waterloo, Bryan, Ridgeville, Napoleon, Bowling Green, Woodville, Fremont, Sandusky, Huron, Vermilion, Lorain, Dover and Cleveland. Continuing along the shore of Lake Erie you will pass through Willoughby, Mentor, Painesville, Madison, Geneva, Ashtabula, Conneaut, O., thence into Pennsylvania, passing through West Springfield, Girard, Erie, Northeast, crossing the state line into Ripley, N. Y., continuing on to Westfield, thence through Portland, Fredonia, Irving, Buffalo, Bowmansville, Corfu, Batura, Strafford, Leroy, Caledonia, Mumford, Rochester.

The total approximate distance is 2,375 miles. If it is your intention to make this tour in the least possible time you undoubtedly can make it at the rate of 200 miles per day; if it is to be a pleasant jaunt then you should be able to make 150 miles easily, or covering a period of about 2 weeks.

None of the states through which you will traverse require you to register, non-residents being exempt. The average rate of speed varies from 8 to 10 miles in the business sections of the cities and towns to 15 and 20 miles in the country. All the states require that you display two white lights in front and one red rear light. Display your home state tag, as some of the states require this, although exempt from registration.

TO CHICAGO FROM HOUSTON

Houston, Texas—Editor Motor Age—A party of four will leave here and drive to Chicago in a Brush runabout the first of September. Could Motor Age inform us as to the best and shortest route for these little cars? Some have told us to drive to Shreveport and thence to the Mississippi river and up the east side of it. Others have told us that we will find the roads on that side miserable, and to go up through Oklahoma and Kansas. Still others say we will find a lot of sand and bad road on this route. Will Motor Age kindly put us next and greatly oblige a bunch of Houston readers.—Charles E. Hogans.

A good route is to follow the line of the H. and T. C. railroad from Houston to Dallas, thence through Grand Prairie, Arlington, and Handley to Fort Worth. From Fort Worth to Oklahoma City, Omaha, and Chicago, see route outlined in this issue, page 22.

A second and more direct route from Fort Worth to Oklahoma City is via Denton, Gainesville, thence along the Santa Fe railroad to Oklahoma City.

You are referred to the Automobile Blue Book, volume No. 4, for complete running directions, and for many alternate routes east of the Missouri river.

Motor Age does not recommend the Shreveport-river route. The route outlined is not over a boulevard by any means, but according to the best information will be found the most practical.

Many times fair roads with longer mileage will more than compensate for the poor roads on a shorter route.

If you have the time and desire to take a longer trip through the Lone Star state go to San Antonio and then to Fort Worth, following the route as covered by the Texas 1,000-mile good roads tour, which is as follows: Houston, Richmond, Rosenberg, Hungerford, Wharton, Ganado, Edna, Inez, Telfner, Victoria, Cuero, Gonzales, Belmont, Seguin, San Antonio, New Braunfels, San Marcos, Austin, Georgetown, Belton, Waco, Hillsboro, Cleburne, Fort Worth.

MISSOURI ROUTE

Alexandria, Mo.—Editor Motor Age—Will Motor Age kindly furnish me through the Routes and Touring Information department with the best direct route from Alexandria, Mo., to Springfield, Mo., or if the roads are better I would prefer to go by way of St. Louis?—Subscriber.

The only route Motor Age can give you is by way of St. Louis. From Alexandria the road lies through Canton, La Grange, Taylor, Palmyra and Hannibal. Leaving La Grange in good weather, with dry roads, you might take the dirt road to West Quincy and on to the river road along the bluffs into Hannibal. It is more direct, but if the roads are at all bad it is best to take the longer route. Follow the gravel road from Hannibal through New London, Frankford and Louisiana; thence on to Calumet, Rock Ford, Eolia, Auburn, Troy, Moscow Mills, Flinthill, Wentzville, Dardenne, St. Charles, Wellston and St. Louis. Between Eolia and Auburn will be found a stretch of road known as the Old Rock road, which is nearly 50 years old and quite rough. You will encounter rock road a couple of miles out of Dardenne, and out of St. Charles perhaps little over a mile of gumbo road. Any additional information on this leg can most undoubtedly be secured at the Hannibal Garage and Machine Co., Hannibal, Mo.

The direct route from St. Louis to Springfield is a very difficult one over

roads of the worst possible kind, so bad in fact that it took a party 5 days to make the 254 miles. It follows the Frisco railroad the entire distance. There is also a route which lies through Mexico, Jefferson City, Sedalia, Joplin and Springfield, which is only a trifle better.

About the only way advisable is from St. Louis to Kansas City, Joplin and then Springfield, and although it almost doubles the mileage you will encounter fair roads, as against the practically impassable ones of the more direct routes. The itinerary from St. Louis to Kansas City was published in Motor Age, issue of April 6, with a map of same; from Kansas City to Joplin can be found in the issue of March 23. It is not a very great distance from Joplin to Springfield, and you doubtless can find specific running directions from some motor car dealer or owner in that town.

A WISCONSIN ROUTE

Milwaukee, Wis.—Editor Motor Age—Will Motor Age through Routes and Touring Information department give me a route from Milwaukee to Powell, Iron county, Wis?—A Subscriber.

The most direct route, according to the Blue Book, from Milwaukee to Powell is through Fond du Lac, Stevens Point, Merrill and Rhinelander. The Milwaukee-Fond du Lac section is through Menominee Falls, Meeker, Richfield, Schleisingerville, St. Lawrence, Addison, Theresa, Lomira, Byron, Fond du Lac. This route is over good gravel and dirt road nearly the entire distance, with the exception of a stretch between Theresa and Fond du Lac. As an alternate route, which the Wisconsin Motorist states is better, although about 5 miles longer, over good roads in all seasons, with fine scenery, pass through Brown Deer, Thiensville, Cedarburg, Horn's Corners, Kreider's, Salter, West Bend, Barton, Kewaskum, Campbellsport, Eden, Marblehead, Fond du Lac.

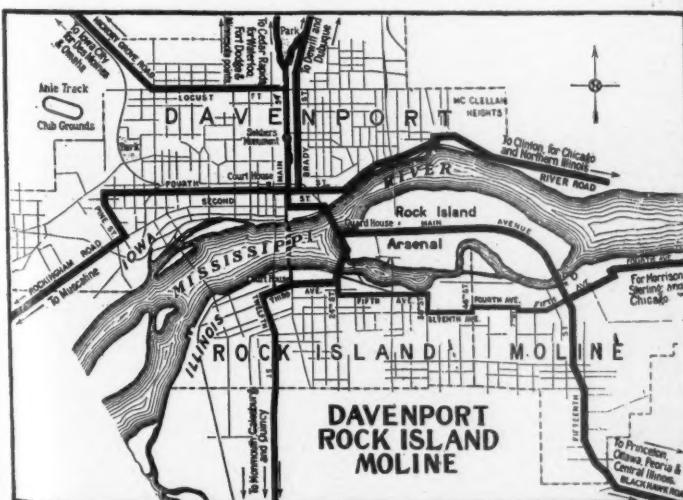
If it is your intention to make this trip a summer outing, Motor Age suggests that before you leave the Lake Winnebago district you make a circuit of this lake, the

east shore being a particularly picturesque drive, over an excellent road sufficiently high above the lake to afford a beautiful view. From Fond du Lac, a complete circuit of Lake Winnebago approximates 77 miles over fine gravel roads. Going up the east shore first from Fond du Lac you will pass through Calumetville, Brothertown, Stockbridge, Sherwood, Menasha, thence down the west shore to Neenah and Oshkosh, following the lake shore route into Fond du Lac.

If you do not care to return to Fond du Lac on the circuit of Lake Winnebago, on reaching Oshkosh take the route for Dale, Redfield, Fremont, Weyauwego, Wauaca, Amherst, Stevens Point. As far as Fremont you will find excellent roads, the remainder fairly good, the worst portion being between Amherst and Stevens Point. The balance of the route to Powell takes you through Crokers Landing, Mosinee, Schofield, Wausau, Taegesville, Merrill, Bloomville, Dudley, Parrish, Jeffries, Rhinelander. From this point on you will find a fairly good road through Hazelhurst, Minoequa and Lac du Flambeau to Powell.

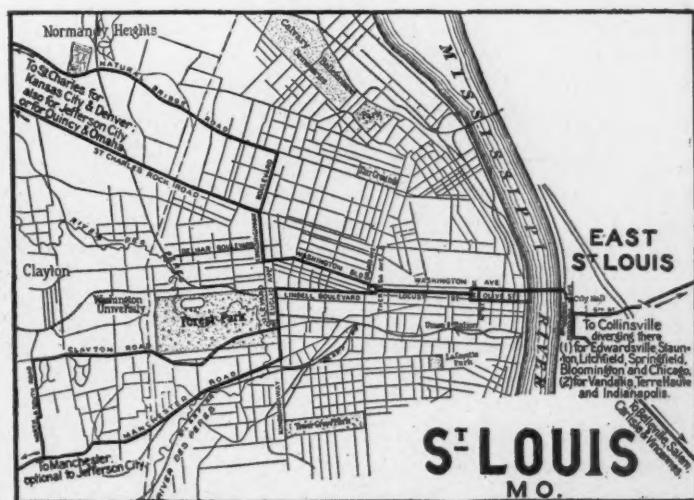
GOOD ROADS ON SANTA FE TRAIL

Hutchinson, Kan.—Editor Motor Age—For the benefit of the many tourists who are planning western trips for the coming season, I would refer them to the map and communications in Motor Age, issue of April 20, pages 24 and 25. During the last 2 years a very large amount of road work has been done both in making excellent grades and in new bridges. Some of the counties through which this trail passes do not have a single wooden bridge. The recent construction is all concrete, and of a character which does not require a motor driver to slow down. A large number of markers have been erected through this section of the state along the Santa Fe trail. The roads are excellent excepting for just a few days after a hard rain. On this trail is Lake McKinney, which is a large lake and is used for irrigating purposes. The new Santa Fe trail follows its banks for some miles.—L. B. Young.



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MOTOR ROADS OF ROCK ISLAND, DAVENPORT AND MOLINE



TOURING ROADS IN AND ABOUT ST. LOUIS

Packard's Boston Service Building and



The luxuriously furnished salesroom of Alvin T. Fuller's Packard Service building. At the left are the offices of the management and technical department; on the right are located the men's and women's waiting rooms and lavatories, and telephone exchange

Magnificent Four and One-Half Story Structure Contains Many Novel Ideas, All Tending to Make It Easy For the Packard Owner

AS is befitting a popular make of car, the Packard service building in Boston is one of the largest and best equipped in the world. It is situated on the outskirts of the city at the end of Commonwealth avenue, the avenue des Champs Elysees or Rue de la Paix of Paris, or, to be more patriotic, the Fifth avenue of New York or Michigan avenue of Chicago. The building is four and one-half stories high, is 78 feet wide and 378 feet deep, is of fireproof brick, steel and concrete construction, has an automatic sprinkling system and is most completely and systematically equipped in every detail.

Stepping off the elevator at the fourth or top floor, one enters the general repair shop; a great, large hall where seventy-three motor cars may be overhauled at one time. The room is almost entirely clear except for a few enclosures near the center of one side, which comprise the shop superintendent's office, time-keeper's office,



ALVIN T. FULLER'S PACKARD SERVICE BUILDING, BOSTON, WHICH IS 78 FEET WIDE AND 378 FEET DEEP

Way the Customers Are Cared For

Convenience of Workmen Looked After While Plant Is So Equipped As to Be Able to Handle All Kinds of Repairs and Adjustments

tool-room, elevator shafts, blacksmith shop and cleaning room; and on either side of these, though not inclosed, are the machine shop and tinsmiths and sheet-metal workers department.

Skilled Workmen Employed

An important feature of the system, and one which impresses a visitor very strongly, is the fact that the work on the cars is highly specialized. The workmen are not men of all work but skilled artisans in one particular branch of it, so that each is a master of his art, and the general results are of a high class, or, to use a Bostonian expression, of considerable grade. There are men who do nothing but adjust motor bearings, others who work only on piston pins and rings, others who specialize on clutch mechanisms; there is a steering-gear expert, a man who is particularly skillful on ball and Timken bearings; and so it is throughout the whole organization. And this specialization does not stop in the shop, but is carried out in the various busi-



An interior view of the technical department of Alvin T. Fuller's Packard service building. Here all complaints of a technical or mechanical nature are systematically and promptly attended to, and ways and means of improving the service evolved



A SIDE VIEW OF THE PACKARD SERVICE BUILDING, BOSTON, SHOWING MAIN ENTRANCES TO SERVICE DEPARTMENT



A VIEW OF THE MAIN FLOOR JUST INSIDE THE ENTRANCE TO THE SERVICE DEPARTMENT

ness departments as well. Every department is highly systematized and at the head of each is a man who, like the tinsmith and the blacksmith and the machine-tool expert, has made a specialty of the line of work which he is directing or performing.

In Main Repair Shop

In the main repair shop there are men who work only on trucks and parts thereof, while the pleasure car is worked upon only by those familiar with its construction. Three men are employed in the tinsmith and metal-working department, in which all radiators and fenders are repaired and where fenders for special bodies are manufactured. The same segregation exists in the machine shop and blacksmith shop, only specialists in the various kinds of

repair work being employed to do it. The blacksmith shop is entirely separated from the rest of the repair department by means of a fire-proof wall, and contains three forges, anvils, a complete equipment of tools and a rim-heating machine used for shrinking metal rims onto the wooden felloes of wheels.

In the machine shop there are a 15-inch lathe, a small speed lathe, a 16-inch lathe, a large drill press, a small drill press, an arbor press, an emery grinder and a work bench. All of the machines are driven by means of shafting and belting from an electric motor of about 3 horsepower.

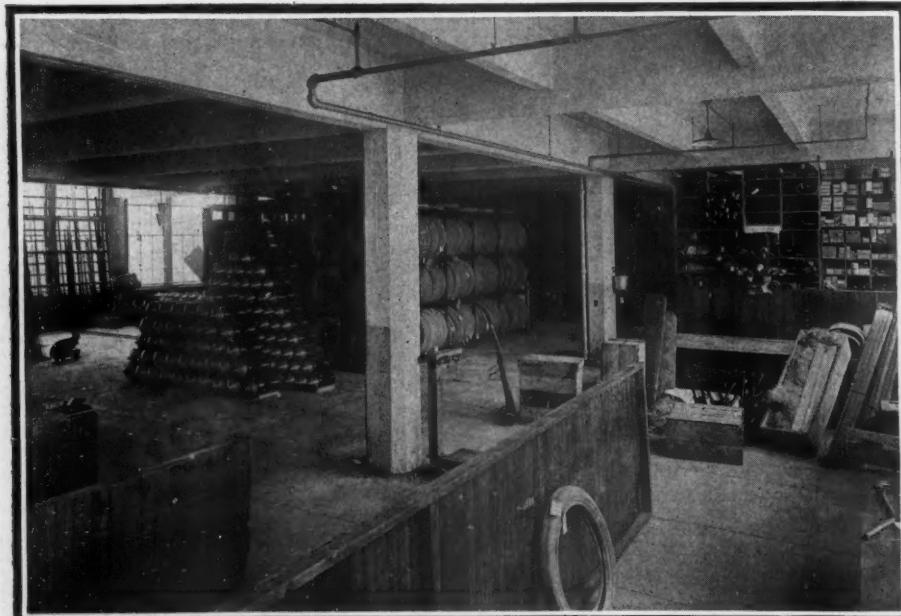
The tool room is small but neatly and ingeniously equipped and a dummy elevator communicates between the tool and supply rooms of each floor and with the

main stockroom on the second floor. Every tool has its place, and a regular factory checking system is employed to keep track of the tools.

System in Tool Room

Each workman has about ten little brass checks about as large as a 25-cent piece, and for each tool that he receives from the tool room he gives a check, which is hung upon a little nail opposite the place where the tool belongs. When the tool is returned, the workman gets his check back again. These checks are numbered, the checks of each workman having a different number, and a record of the numbers is kept in the office, so that when a man leaves the company's employ he is responsible for a certain number of checks of a certain number, which must be returned before he is paid off. Should he not have the required number of checks, a short inspection of the vacant places in the tool racks of the stockroom will show whether or not he is responsible for any tools, and if so, just what tools he has borrowed and not returned. Thus the tool equipment is not easily lost or stolen.

A notable feature of this plant is the Autocall system of calling the heads of the various departments to the telephone. When a foreman is wanted on the telephone, instead of having someone near the telephone answer it, find out who is wanted and then go looking for him, the switchboard operator simply manipulates or sets a connection of the autocall system, and a large bell or series of bells located at intervals throughout each and every department will begin to ring a certain number of times at regular intervals until it is heard by the party wanted, who then goes to the nearest telephone, answers the call and then the operator breaks the call-bell circuit. Thus two rings, that is, two strokes on the bell, may mean the repair



A SECTION OF THE STOCK DEPARTMENT OF THE PACKARD SERVICE BUILDING



A VIEW OF THE REPAIR DEPARTMENT, WHERE ONLY EXPERTS ARE ALLOWED TO MAKE ADJUSTMENTS

shop foreman; three strokes, the paint shop foreman; four, the garage foreman, etc., and no matter in what part of his department or any other department he may be the call is instantly recognized, and answered at the nearest 'phone. There are twenty-six stations throughout the building for getting into communication with the various shop foremen.

Time-Keeping System

An international time-keeping system is employed, in which the workmen each have a card arranged on a rack placed at one side of a time recording clock located near the door, and when the workmen pass in and out each day they take their cards out of this rack, slip it into the time-recording clock, have the time recorded upon it, then place it in another rack on the opposite side of the clock. This is a most extensively used system, which enables the time clerk to know at a glance what workmen are absent, which came late and how late they were. For recording the time on job tickets, automatic time stamps, situated at the time clerk's window, are employed. With these, every minute of a workman's time is recorded; for when he hands in one ticket and takes out another for another job, he stamps the one handed in, and the one he receives, immediately afterwards.

The elevator, communicating between all floors, is one of the largest in New England, it being capable of easily carrying two pleasure cars or the largest truck.

Cleaning the Cars

In the cleaning room, where all motor car parts are cleaned up preparatory to an overhauling, there is a cleansing tank containing hot potash solution for cleaning oil and grease from all metal parts except aluminum, and a high-pressure stream of hot or cold water from a hose and nozzle is provided in one corner for cleansing

aluminum crank and gearcases. Gas is used for heating the potash solution in the summer and steam in the winter; so that it is always ready for use.

The third floor of the building is divided into six sections, one of which is devoted to the painting and varnishing departments, and the others to enameling, finishing, tire repair, body-work and wheelwright departments.

Before a car undergoes an overhauling it is taken to the third floor and stripped of its equipment, which is checked and placed in lockers; then the body, fenders, tires, chassis, etc., are sent to their respective departments if to be repaired or repainted, or put in storage if they are to await the repair of other parts. The paint-shop is divided into three rooms and most

completely equipped. Thirty-seven men are employed in this department; and here all chassis and bodies are painted and varnished in an upto-date and systematic manner. The color room is the largest of the three divisions; here the chassis and bodies are cleaned, old paint removed, and preliminary coats applied up to the color varnish. A section of this room is used as a color varnishing department, where hardwood parts such as glass front, dashes, body trimmings and the like are stained. The other two divisions are the rubbing varnish and striping room and the finishing room, in which the temperature is kept between 71 and 90 and in which the cars remain for at least 48 hours to dry.

On this floor, as on all floors, a Bowser oil supply system is installed in the tool



SHOWING HOW SMALL ARTICLES ARE KEPT IN THE STOCK DEPARTMENT

room, by means of which oils may be obtained direct from the main supply in the basement.

In the finishing room of this floor, all body fittings are re-attached. In the wheelwright department, four men are employed who do nothing but remove wheel channels and cut down spokes for new quick-detachable rims. This department is equipped with a grindstone for dressing down the edges of glasses for windshields, a one-cylinder air pump, an emery wheel and buffer, a drill press, a band saw, a power combination hollow auger for machining and drilling wooden rims and spokes; and means for surface planing, fixing steering wheels, and cutting and setting windshield glasses.

In the Body Room

Among the operations performed in the body department are: Top-fitting, re-upholstering, foredoor fitting and trimming, and the making of seat coverings; and the equipment includes special racks for storing tops, two electric motor-driven sewing machines, whitewood benches, cutting tables with the different cloths or materials conveniently arranged on rolls at one end, and a special apparatus for use in making tops, which is mounted on castors and thereby made portable.

The front end of the second floor forms a balcony which extends out over a portion of the show room of the first floor; and on this balcony is located the accounting offices. Immediately behind this department is the purchasing and main stock departments; and the rear portion of this floor is laid out for the storage of extra bodies, for limousine and landaulet

bodies in the summer time and touring and runabout bodies in the winter. In this latter department double-decked racks two bodies deep are provided, so that all available space is utilized, and each space has letters and numbers painted on a beam at the front, so that from a record in the office the space occupied by a customer's motor car body may be found at a moment. Cadillac delivery wagons are used by the Fuller people.

The stockroom is excellently arranged and systematized; and in connection with the shipping and receiving department, which is practically a part of the stockroom, a 3-ton Packard truck, a Cadillac 30-delivery wagon and three one-cylinder Cadillac delivery wagons are used.

As above mentioned, the front portion of the main floor is a show or sales room, beautifully decorated and elegantly furnished. At the rear of the sales room to one side is a retiring room, a telephone exchange having trunk lines, three lines with the downtown salesrooms, fourteen telephone connections throughout the building; writing desks for customers and toilets and shower baths. Opposite these is Mr. Fuller's office and those of his aids, and the offices of the technical and specification departments.

Other Features Numerous

Immediately behind the salesroom is storage room for finished repaired cars awaiting delivery, a chauffeur's waiting and smoking room, a service department where cars are brought in for repairs or adjustments, an electrical department arranged directly under the stockrooms of the upper floors and having the use of the

same dumb waiter, and a place at the rear of the building where chauffeurs may work on their own cars and get whatever assistance required. Every car that enters or leaves the building is checked in and out. Orders for repairs are made out at an office just inside the door and the cars turned over to the repair department and a systematic record of every operation thereon is kept. The electrical department has a rectifier for charging batteries, a magnet-charging apparatus, and is completely equipped for making ordinary magneto repairs and adjustments.

A portion of this first floor also is devoted to the use of the final testers, and contains a speed lathe, an emery wheel and buffer, a drill press and an electric motor driven tire pump. A class also is maintained here for the education of truck chauffeurs.

Restaurant in Basement

The basement contains a restaurant where both office and shop employees and chauffeurs may get an excellent meal at a very reasonable cost; locker and dressing rooms for the workmen, with steel individual lockers and sanitary wash basins; an oil storage room, from which oil is drawn by means of the Bowser pumps previously described; an auxiliary service department with two washracks and a polishing bench; and a coal and boiler room, the one having a capacity of 150 tons of coal and the other two massive boilers. There is a 1,000-gallon gasoline storage tank underground in the yard away from the building, and a water tower on the roof, which is 120 feet from the ground and has a capacity of 45,000 gallons.

French Motor Routes

A 1911 handbook of routes for the English and American motorist in France, known as Stevens' "Motor Routes of France," has recently been issued. It is an annual publication and in its present form includes new and up-to-date information on the routes in the French country, giving data on the new International traveling passes, driving licenses, customs, etc. For the benefit of the tourist in the British Isles there are routes to the ports of embarkation for the Continent. Thirty-odd routes are outlined, including the best routes to Paris, to the principal tourist and health resorts, and French frontiers. A general map of routes, with several sketch maps, are included. Published by Eveleigh Nash, London, and Brentano's, Paris.

English Road Guide

"The Autocar Road Book," volume 1, compiled by Charles G. Harper, covers that portion of England south of the Thames. This volume not only furnishes practical details as to routes, distances and the character of the road, but gives condensed information relative to the scenery and the historical and literary associations of the towns and hamlets passed through. The plan of the book takes London as the center, and from it the roads east

The Motorists' Bookman

and west in succession; the Dover road and its offshoots to Margate, in the east; to the Exeter road and its tributaries, to Panzance and the Land's End, in the west. A cloth map, 35 by 12, augments the value of the book. Methuen & Co., London.

Early Chicago Days

A bit of suburban history from the days of Indian trails to the present is Alfred Bull's "The Township of Jefferson, Ill., and Dinner-Pail Avenue." This thin little volume of some fifty-odd pages deals with the history of Jefferson township, now known as the twenty-seventh ward of Chicago. In the early Chicago days Milwaukee and Elston avenues, as well as Irving Park boulevard, were famous Indian trails and Irving Park an Indian settlement. Milwaukee avenue was a toll-gate road and even as late as 1889 the toll gates at Milwaukee and Fullerton avenues were in operation. The author in collect-

ing data for this little bit of history has gleaned interesting reminiscences of the days of pioneer life. Published by Alfred Bull, Irving Park, Ill. Price, 50 cents.

Motoring in South of England

Now that the touring season is at hand many new touring books and many revised and amplified editions of previous issues are being brought out. One of the latest is "Motoring in the South of England," by Charles C. Harper and issued under the auspices of the touring department of the Royal Automobile Club. This volume is one of ten which in their entirety cover the British Isles. Some of the routes covered are: The Dover road, the Hastings road, the Brighton road, many roads radiating from London; cross-country routes, the Wessex of Thomas Hardy. There are illustrations galore of the historical buildings and monuments to be found in this section of England, augmented with maps and pen-and-ink sketches by the author. Included in the book is information relative to the principal golf links, ferries and steamer charges, and considerable other data of value to the tourist. Mr. Harper is the author of several books on the British highways. Published by Edward J. Burrow, London.

Touring for Pleasure, Not Mileage

(Continued from page 5)

oughly before starting. In addition to the supply of wrenches furnished with the car get a small hammer, a cotton-pin puller, two or three coils of fine wire, one of copper, one brass and one of medium steel wire. These will prove useful in perhaps a score of emergencies. Don't overlook a dozen different sizes of cotter pins, some spare nuts and bolts, a roll or two of tire tape, plenty of waste, a screwdriver or two, two pairs of pliers, etc.

A Wise Precaution

It is a wise precaution to take some extra cylinder oil along. If you are accustomed to using a certain grade of oil take four or five 1-gallon cans with you. There is a possibility that the evening or morning you need more oil none of that particular grade is available and the smooth running of your motor is upset by having to use an oil not suited to that particular design. There is, too, the danger of carbonization of oil and the consequent trouble of motor heating. If you cannot carry 5-gallon cans have some shipped on ahead to a convenient town.

It seems scarcely necessary to draw attention to the need of anti-skid devices. If you use tire chains secure a set of four and see to it that they are the correct size for your tires. Do not take the salesman's word for it, but actually fit them, for trial only, before you set out. This precaution may save the necessity of having to make a nasty improvised repair in a rainstorm on the route, should you happen to find the chains were too small or too large. Carry the chains in the small hemp sacks intended for them. It is questionable if you can find anything that makes a tonneau dirtier than to toss four muddy chains onto the floor after taking them off the wheels. Everything in its place and a place for everything is one of the first rules in touring.

It is always wise when starting on a

country tour to fit rubber bumpers to prevent the frame side members striking on the axles, when the car drops into a rut. Fit these bumpers before you start because if you hope to get them at the first town you pass through you invariably will be disappointed. They are hard things to get and to procure them during a tour often seems impossible. In addition to these bumpers leather rebound straps are good, particularly if rough going is to be encountered. These two precautions will save springs and add materially to the pleasure of the rear seat passengers.

It is scarcely necessary to draw attention to the brakes before setting out. Both sets should be adjusted so that they will slip both of the rear wheels. If the brakes will only slip the wheel on the left, or the one on the right, you will be pretty certain to have a bad skid when the brake lever is applied. The brake should act evenly on both wheels to give satisfactory results.

Baggage-Carrying Facilities

Much of the pleasure on a tour depends on the facilities for carrying baggage. It is disagreeable to have suit cases and other baggage fastened on all sides of a car. The baggage should be kept together. If three adults are riding in the tonneau there will be little room in it for suit cases, unless it is specially long, in which case two suit cases can be placed back of the front seat, where they are entirely out of the way. If placed here they should be held in place to the robe rail by a leather strap, so that they are not tossed about the floor and onto the feet of the passengers. If there is not room in the tonneau, the next best position is on a trunk rack at the rear. This is a very dusty place and so the suit cases should either be placed in a special trunk or wrapped in oil

cloth, otherwise the dust will get in and if wet roads are encountered the suit cases will soon become disreputable-looking affairs and scarcely fit to take into a clean room in a good hotel. It is poor policy to carry suit cases on the running boards because the extra weight is almost certain to spring the running board out of position and warp the fenders so as to mar the general graceful appearance of the car.

It is a mistake to take too much baggage. Too much is a big nuisance. It is always in the way. If many extra supplies of linen and clothing have to be had it is often better to express them from point to point than crowd the car up with them. Never put rain coats, sweaters or overcoats in the suit cases, but rather hang them on the robe rail on the back of the front seat, being careful to fold them carefully when hanging them on and putting the rain coats on last, as they are least injured by dust and are in the most convenient place in case of a rain storm. These should be put in place before the suit cases are put in the tonneau. It is a wise precaution to use a short strap to bind the coats in place and so prevent them fluttering, as they often do when traveling fast with a slight breeze blowing. If extra robes are needed they too can be carried on the robe rail.

From the driver's point of view it is a wise precaution to keep a pair of pliers, the gas tank wrench, one or two smaller wrenches, a coil of wire and some other small pieces under the cushion of the front seat or in the pocket between the front seats. Such articles are often needed and it saves a great deal of time not to have to stop and open the tool box when they are needed. In one of the pockets on the fore doors should be a good supply of waste. This is a good location for the Blue Book used in the route directions, also for the goggles and matches.

THE motorists of Detroit are struggling with the new local ordinance recently adopted by the common council and which imposed a number of severe restrictions on motorists. The ordinance has been in effect only a little more than a week, but already it has resulted in well nigh hopeless confusion. More than 500 warrants were sworn out in the first 3 days in which the ordinance was in force. Then a halt was called and an interpretation of the law made which removed the basis of many of the complaints. Considerable space has been given to the ordinance by the local newspapers.

The ordinance provides that a motorist must bring his car to a full stop before crossing a railroad or street railroad track. This has been informally modified, however, both in the cases of motor-

Legal Lights and Side Lights

ists crossing a track parallel to the route they are traveling, and in regard to crossings patrolled by members of the traffic squad who signal.

Motorists complain bitterly over the necessity for stopping before passing a street car that is either taking on or discharging passengers. In many cases this imposes an entirely unnecessary hardship. Also, the smoke and gas expelled in the succession of starts and stops has caused ground for complaint on the part of

pedestrians who are already kicking loudly.

The Detroit Automobile Dealers' Association has proclaimed its protest formally and is endeavoring to have the ordinance repealed. Retaliatory measures have been proposed. One of these is a parade along Woodward avenue, in which the letter of the ordinance will be observed in its entirety. Such a demonstration would undoubtedly afford a striking object lesson, as traffic would obviously be at a standstill for some time while the parade was wending its deliberate way through the business section. Another method possible, is an assault on the ordinance through the courts. It is believed that, in case the matter were tested, the entire ordinance might be proclaimed invalid by the supreme court. Several prominent lawyers are on record to this effect.

French Small Cars

SMALL-CAR construction in France—and by such a definition is meant the light runabout selling complete at not more than \$800—is almost entirely in the hands of very small firms. In most cases the small car only serves as an introduction to the motor industry, and as soon as a reputation has been obtained and a factory of any importance got together, the makers abandon the really cheap car for larger and more powerful models. It is because of this condition of affairs that the appearance of a cheap two-seated runabout by the Bayard-Clement Co. is of more than ordinary interest, for this firm cannot by any means be classed as a small one: it has its own foundry and forges in the Ardennes district and a factory near Paris which for modern equipment and management will stand comparison with any in the world. This practically is the first occasion on which a high-class modern French factory has turned its attention to the producing of quantities of cars selling at less than \$800.

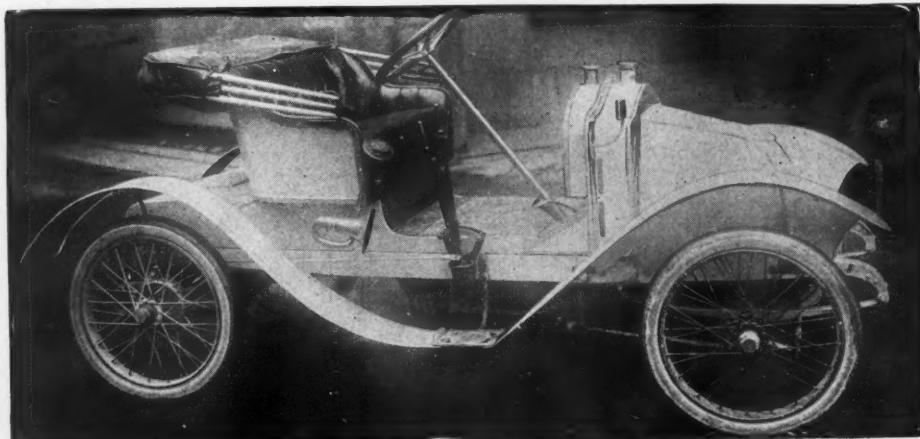
With the exception of the rear suspension, which is admittedly an idea borrowed from America, there is little difference in design between this cheap two-seater and the largest and most powerful cars built by the Bayard-Clement company. The motor is a twin-cylinder in one casting with a bore and stroke of 2.3 and 4.3 inches. The size of the motor has only

been arrived at after considerable road tests, the original motor having a bore of 2.7 inches, which was found to be too small for some of the hills it was intended the car should climb. With the increase it is declared that there is no hill in France beyond the capabilities of the car.

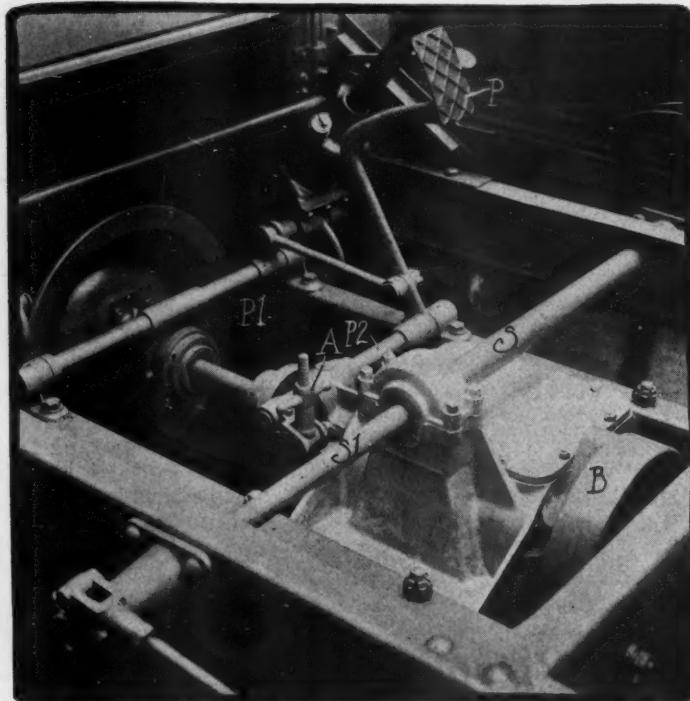
The general design of the motor is in accordance with that adopted about a year ago for the entire series produced by this firm: cylinders in one casting, valves on one side operated from below, cam-shaft and cams in one piece, thermosyphon circulation with a plain tube radiator on the dashboard and no fan either

in the radiator or on the flywheel. Naturally the bonnet is of the style known as the Renault type. The crankshaft, with its cranks set at 180 degrees and fitted with balance weights, is carried on two anti-friction bearings. The pistons are fitted with five rings each.

Lubrication is of the circulating type, the base of the crankchamber forming an oil reservoir filled from the right-hand side of the motor, the filler forming



CLEMENT LIGHT CAR WITH WIRE WHEELS



TWO VIEWS OF THE NEW CLEMENT LIGHT CAR

The left illustration shows the gearbox simplicity—P, pedal for running brake and clutch; A, brake adjustment; B, internal brake drum; S, speed change lever sleeve; S1, emergency brake rod; P2, brake rod; P1, clutch shaft. The right illustration shows the American type of rear suspension



One of the Few to Push the Manufacture of a Cheap Two-Passenger Car is the Bayard-Clement Co., Which is Turning Out a Model Which Incorporates Several American Ideas

breather and strainer and being provided with a float to indicate quantity of lubricant available. A plunger type of pump, operated from the rear extremity of the camshaft, draws the oil from the tank, and by means of leads cast within the crankchamber delivers the lubricant to the two main bearings and to troughs under each connecting rod end. Dippers on these latter assure a plentiful feeding, the overflow naturally returning to the

oil tank, after being filtered. The design has the advantage of simplicity together with the entire absence of external oil pipes or any separately attached oil vessel.

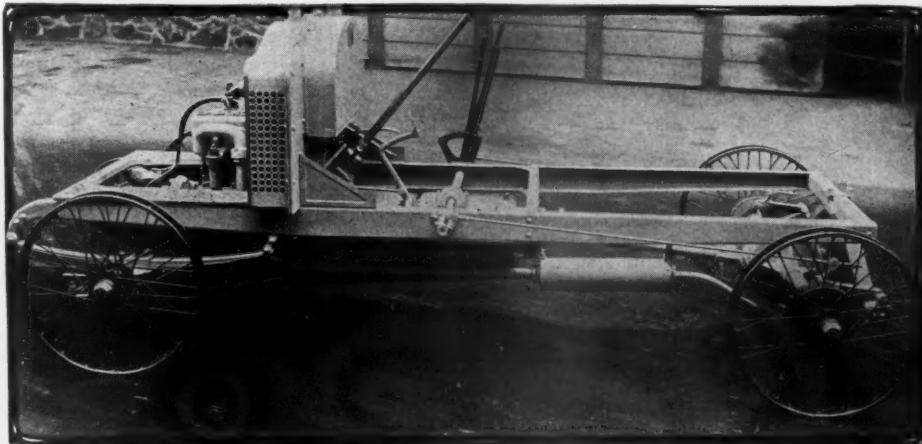
Ignition is by high-tension magneto only, this organ mounted on the forward extension of the timing gearcase, which also serves to carry the starting crank.

The gasoline tank is carried on the dashboard, back of the radiator, and has a capacity of about $3\frac{1}{2}$ gallons. This location of the fuel tank is becoming common on French cars of even high power.

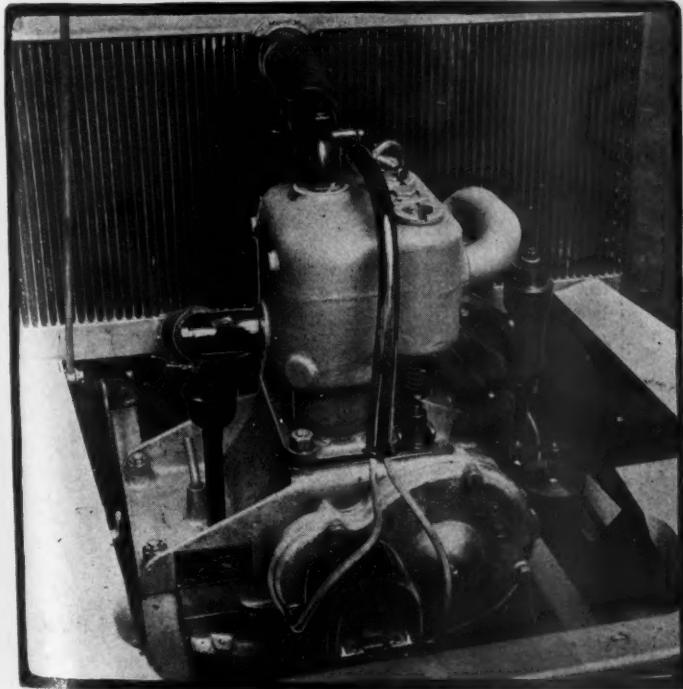
The gearbox providing three speeds and reverse is mounted on the same subframe as the motor. Connection between the motor and the gearset is by means of an ordinary type of leather-faced cone clutch. Plain bearings are used in the gearbox, in place of the ball bearings employed on the more expensive cars. A departure from general practice is the abolition of the pedal for the foot brake, this being combined with the clutch pedal, a slight depression releasing the clutch and further effort applying the brake in an efficient manner.

Final drive is by propeller shaft, with a ball-and-socket joint at the forward end of the shaft.

One of the distinctive features of the car, and one which has doubtless been adopted with a view to reduced cost, is a transverse rear spring of a type very familiar to American motorists. This is the only feature in which the small car differs radically from the firm's larger models. The rear spring is shackled to the axle through forged hangers brazed on the extremities of the axle housing. Internal expanding brakes are carried within drums on the road wheels and are operated by means of a side lever. Wire wheels are employed, carrying tires of $25\frac{1}{2}$ by $2\frac{1}{2}$ inches, with $27\frac{1}{2}$ by $3\frac{1}{10}$ as an alternate.

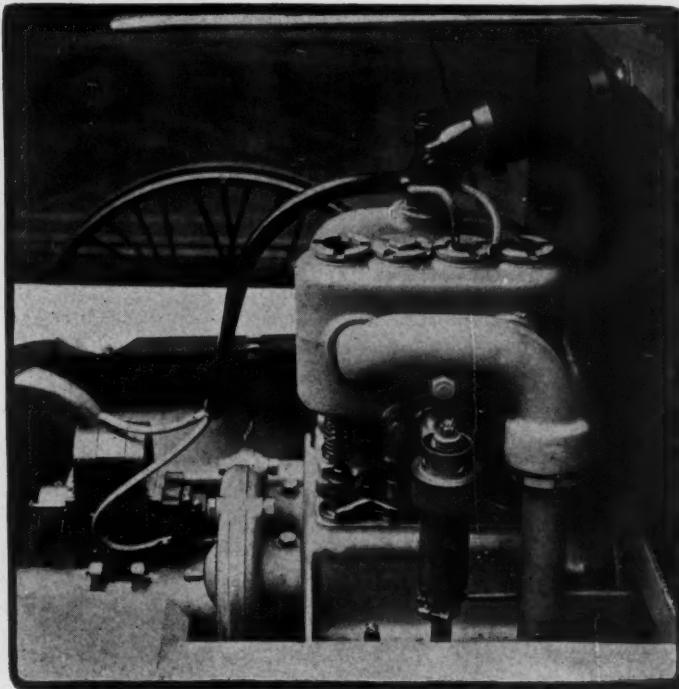


CLEMENT WITH RADIATOR AND GASOLINE TANK AT THE DASH



TWO VIEWS OF MOTOR ON CLEMENT LIGHT CAR

Thermo-syphon water cooling is used on the two-cylinder motor. The magneto is located in front, with its shaft parallel with the crankshaft. The float chamber of the carburetor is located low down, with the mixing chamber higher up and close to the cylinders of the engine.





IN Quaker Electric Run—Four Woods, a Columbus, Hupp-Yeats, Babcock and Waverley have been entered for the electric run of the Quaker City Motor Club of Philadelphia on June 10. The route is 50 miles in length.

St. Louis Run Postponed—The Memorial Day run of the Missouri State Automobile Association was postponed, owing to the discovery at the last minute that a sanction could not at once be obtained. It is now planned to hold the run some time in July, following the run of the Automobile Club of St. Louis.

Another New Club—Looking toward the furthering of the Columbia river road in Oregon between Portland Hood river, the Hood River Automobile Club became a permanent organization the past week. The club is composed of fifty owners residing in Hood River and vicinity. Leslie Butler, the president of the new organization, immediately appointed a good roads committee with authority to take steps as are deemed necessary on the new road and to get quick action.

Central New York Activity—The Automobile Club of Syracuse, N. Y., is now fairly entering into its summer activities. The headquarters of the club are flooded with calls for road data for trips in all directions. The addition of new routes and the improvement of highways through central New York combine to make the sport hereabouts more popular than ever. One of the most popular runs with Syracuse owners is the trip to Sherburne and Rexford Falls. The distance is from 52 to 58 miles, according to the route. It is a comfortable 3 hours' trip in dry weather. The entire route has been placarded by the Automobile Club of Syracuse, which is remarkably active in looking after tourists' interests.

States Co-operating—A tri-state association, composed of motor clubs in Pennsylvania, Delaware and Maryland, the chief object of which is to promote the construction and maintenance of a first-class public improved road between Philadelphia, Wilmington, Baltimore and Washington, in as nearly a straight line as is possible under the circumstances, is proposed by officers of the Delaware Automobile Association, having its headquarters in Wilmington; the Maryland Automobile Club, having its headquarters in Baltimore, and representatives of clubs in Philadelphia, and its consummation, from what can be learned, is likely to materialize in a very short time. The need of closer co-operation of the motoring interests in the three states and the four cities mentioned above than is now the case is apparent to those in particular who have occasion to use the

highways between Philadelphia and Baltimore, and as a result of a conference at the recent national convention of motor clubs, which was attended by representatives from the three states, the latter discussed the matter and the seed was there sown which is likely to bear fruit before long.

Maryland Touring Privileges—With the increasing popularity of touring in the southern states it will be good news to northern motorists to learn that a special proclamation has just been issued by Governor Crothers of Maryland, according to an announcement made by the Touring Club of America, whereby motorists who are residents of the states of New York, Pennsylvania, Delaware, Virginia and West Virginia, may tour in Maryland for a 7-day period without obtaining any separate state license or tag from the commissioner of motor vehicles of Maryland.

This privilege, of course, is only extended to motorists who have complied with the laws of the state in which they live. Motorists residing in states other than those named may secure the Maryland tourist license tag, good for a period of 7 days, by applying at the Touring Club of America, Broadway and Seventy-sixth street, New York.

Touring Privileges in District—In keeping with the widespread interest in the proposed reciprocal trade relations with Canada, which is one of the leading questions now before the national legislators at Washington, it is announced by the Touring Club of America that the motor regulations of the District of Columbia have been amended recently by the commissioners for the district so as to provide for reciprocal motor privileges with the various states of the union and foreign countries. According to the recent law



TOURING IN DETROIT ELECTRIC AMONG RAMAPO MOUNTAINS IN NEW JERSEY



NEW YORK OFFICES OF TOURING CLUB OF AMERICA SHOWING OFFICIAL CARS

visiting motorists in the District of Columbia may now receive the same touring privileges there as their respective state or country grants to other visiting tourists.

Chooses Officers—The Council Bluffs, Sioux City and Spirit Lake Highway Association, recently formed, has elected Frank Patch, of Hartly, Ia., president; C. A. Kneedler, of Sioux City, Ia., secretary, and L. H. Jones, of Sioux City, treasurer.

Will Bound United States—What promises to be one of the most unique trips yet undertaken in America is planned by F. O. Berg, a prominent manufacturer of Spokane, who contemplates making a circuit of the boundary lines of the United States, starting from Spokane the middle of June. Accompanied by his family, Mr. Berg will drive to the Washington-British Columbia line, thence along the Pacific coast to San Diego. After touching the Mexican border the party will pass through Arizona, New Mexico, Texas and Louisiana to New Orleans, thence through Alabama and Florida, continuing the trip northeastward into New England, visiting Washington, Philadelphia, Baltimore, New York, Boston and other large centers. From New York the route follows the northern boundary westward to Spokane.

New York Route Information—Four highways of Onondaga county, N. Y., are being extensively repaired, and until the completion of the work detours will be necessary from three of them. The road leading east from East Syracuse through Manlius Center to Mycenae on the Genesee turnpike east of Fayetteville is under contract, and various sections are closed. A contract is in progress on the valley road, from Elbridge to Jordan, requiring motorists to take the East Hill road. The road from Manlius to Chittenango is being repaired and is inconvenient for motorists. The Jamesville Pompey road is also being repaired, but this will not affect through tourists. Members of the Automobile Club of Syracuse warn motorists not to attempt the impossible in crossing the Montezuma marshes. They say that these are now inaccessible, and that to try to cross them is to invite disaster. The new

state road connecting Camillus and Skaneateles is to be built this year. This is to be a fine piece of macadam and will cost \$50,000.

Cleveland's Orphans' Day—President Fred C. Wood, of the Cleveland Automobile Club, announces that the annual orphans' outing and picnic will be the largest that Cleveland has had. The outing will be held June 23, but already motorists are coming to the front with pledges of their cars. A local book concern has donated 2,000 flags and other merchants have signified their intention of donating peanuts, badges, pop-corn, fruit and other things dear to a child's heart.

Fighting Toll Roads—An anti-tollgate league has been formed in Baltimore to urge the abolition of the tollgate on the Reisterstown road, near Druid Hill park. This tollgate is the last one left within the city limits and its situation is complete, in that it controls the only thoroughfare for hauling in that section. The league demands that this tollgate be abolished by the state acquiring all the rights to the road, making the highway free and open to the public, or that the right be given to use the west road of the park to connect with Auchentoroly terrace for greater traffic purposes. Heavy traffic is forbidden in Druid Hill park and at present this toll road is the only available one for many streets around.

St. Louis' Card—Two of the three contests planned for St. Louis in June have been postponed because the American Automobile Association has not given its sanction. One of the runs was to have been about the middle of June into the Ozark mountains for a cup given by the Arcadia Country Club, an Ozark booster organization. It has been postponed to the middle of July. The run is a 3-day affair, under the auspices of the Missouri Automobile Association. The Missouri association also had planned to give its first annual endurance run Decoration Day, including four classes of entries, but it also failed to get the sanction of the A. A. A. and has been postponed to some time in July. The meet was to include the owner's reliability run, electric pleasure vehi-

cle endurance run, manufacturers' and dealers' endurance test, and a commercial vehicle test. The two former conflict with the annual meet of the St. Louis Automobile Club, which is to give its fourth meet June 24, and they have been eliminated from the program of the state meet for July. Only the manufacturers' and dealers' and the commercial vehicle classes will be run in the state meet, which is to use the same course as the city meet, 138.2 miles. About fifty entries have been received, but this number is expected to be somewhat increased by the postponement.

Ford Climbs Ben Nevis—All England has been aroused by the sensational feat of an American Ford which has succeeded in climbing Ben Nevis, the greatest peak in the kingdom. The road to the top is a mere pony track; most of the upper surface is loose stones, and snow was met at 300 feet. The total height of the mountain is 4,406 feet. It took 4 days to make the climb and another day to come down, so the roughness of the journey becomes apparent. The Ford was shod with Goodriches and neither car nor tires had any trouble.

Getting Accurate Road Information—A fund of road information and touring data has been obtained during the past few days by C. P. Cox, the special representative of the Touring Club of America, who now is on an extensive tour through New England. Mr. Cox has traversed all of the popular touring routes from New York to Boston, including both the shore line trip by way of New London and Providence and the inland route through Springfield and Worcester. It will be interesting to tourists to learn that Mr. Cox has found many necessary detours on the line of the old Boston post road in order to complete a satisfactory run. These have been outlined with great accuracy, giving at the same time the exact nature of the roads as they exist today. The complete list of these detours and general road conditions have been received at the Touring Club of America, New York, where the information is available to all motorists preparing for an extended New England trip.



The Realm of the Commercial Car

THE TITAN CAB—A NEW IDEA

THE United States Motor Co. has put out a taxicab which is different from the conventional type in price, weight and equipment. It is called the Titan, weighs complete approximately 1,600 pounds, and is built to carry only two passengers. The body is of the landaulet type, having a single front seat with a baggage rack at the driver's right. The seats and trimming are of rattan, while aluminum matting is used for floor boards, scuff plates and toe boards. The lower inside portion of the body also is lined with aluminum. There are heavy curtains fitted to the windows and the windows are fastened in by means of screw strips instead of putty, while thumb screws and felt keep the glass rigid. The speaking tube is a stationary one-piece metal tube which goes through the division post between the two front windows. The driver is protected by a top or canopy.

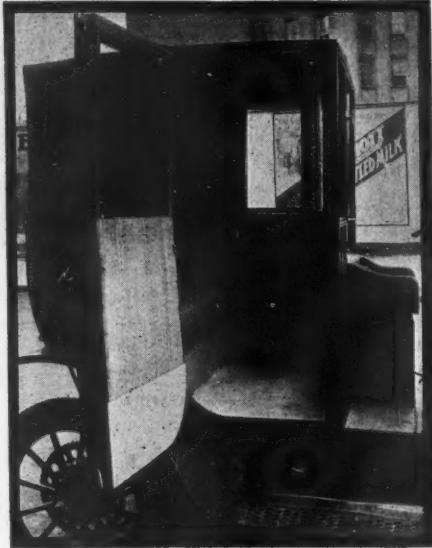
The cab has a wheelbase of 88 inches, while the motor is a single-cylinder with a 4-inch bore and 5-inch stroke. Drive is by double side chains. Other mechanical features include splash lubrication, thermo-syphon cooling, high-tension magneto, multiple-disk clutch, selective gear-set and wood axles.

SAMPLE OF TRUCK ECONOMY

Thirteen horses have been displaced by a 4-ton Sampson freight motor in one of the oldest creamery companies in southern California. For years this company, the Raab creamery, of Pasadena, hesitated to adopt the motor truck for hauling its product to and from the receiving station, 9 miles away. It maintained one four-horse team, three two-horse teams and three reserve horses. Since installing the truck these teams and three of the four men employed have been found unnecessary. The truck is doing all the work. Two 18-mile trips are made every morning. On the trip to the station a load of 9,000 pounds of milk is taken, and 8,000 pounds of barley and other supplies are hauled on each return journey. The total weight of the two hauls is 34,000 pounds, the distance covered 36 miles.

TRUCKS IN COUNTRY SERVICE

Commercial cars are making rapid headway for business purposes in the counties of Maryland. They are particularly in demand for passenger, freight and express purposes and already a number of lines have been established and are in operation in various sections of the state. One of the most important of these lines is that between Frederick and Libertytown, in Frederick county, a distance of 13 miles. A 1½-ton White truck is used for this service



INTERIOR TITAN CAB

and, according to the owner, has replaced a stage coach and five horses. The owner furthermore claims that his earnings since the truck has been in service have increased two and a half to three times the amount realized with the operation of the coach and five. With the stage and five horses the highest amount taken in during a month was \$185, while with the truck the owner averages at least \$400 a month and frequently this amount goes as high as \$500 a month. The truck makes two trips daily, and the operating expenses, according to the owner, are no greater than they were with the coach and five.

PARIS QUITTING THE HORSES

The city of Paris has decided to change all its horse-drawn street sweepers and

watering carts for motor-driven vehicles, and with this object in view has asked for contracts from French manufacturers. Sixty vehicles have to be supplied within a period of 2 years, but before placing a definite order the city authorities have asked for plans and estimates to be submitted, and after these have been studied the successful firms will be asked to construct machines and submit them to a practical test. The firms taking part in the competition are Renault, Clement-Bayard, Laffy, Duret-Sohy, Blum, Berliet, Sautter-Harlé, de Dion-Bouton, Vinot-Deguingand and Aries. The postal department of Paris has also decided to abandon all horse-drawn mail vans and has placed an order with the Delahaye company for 170 new vans to be delivered this year.

LOZIER BUILDS TRUCK

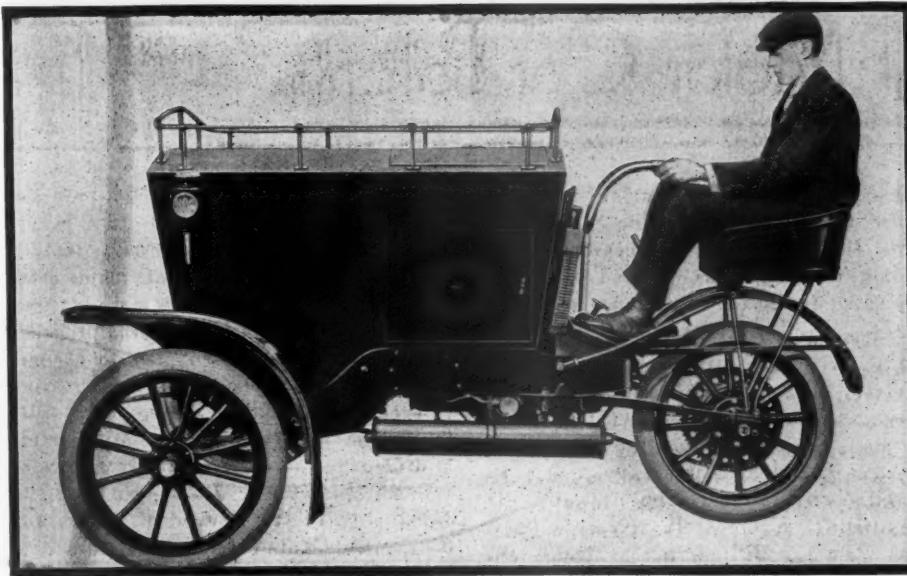
The Lozier company has issued an announcement to the effect that it will shortly begin the construction of trucks of large carrying capacity. For 2 years this company has experimented with trucks at its Plattsburg factory, which vehicles now are in service in Detroit. The building of Lozier trucks for the market is at present in progress at the Detroit factory.

BOSTON RUN POSTPONED

The Boston Commercial Vehicle Dealers' Association has decided to postpone its run, scheduled for this month, until next September some time. The reason given out publicly is that the contest committee did not wish to interfere with the Glidden tour. That is but one reason, however, for it is known that the committee is not satisfied with the rules governing truck



NEW TITAN CAB MADE BY UNITED STATES MOTOR CO.



MOTORETTE THREE-WHEELED PACKAGE CARRIER

runs. Chairman A. B. Henley wrote to the contest board for information, but he did not get an adequate reply. It is thought that by September the Manufacturers' Contest Association and the A. A. A. will have rules drafted for truck events that will suit Boston. There is a possibility, too, of the question of a separate show in Boston for trucks being compromised by an open-air exhibition in conjunction with the run about that time.

MOTORETTE IN COMMERCIAL FIELD

To meet the demand for a light vehicle for the rapid delivery of small parcels in the service of department stores and the like the C. W. Kelsey Mfg. Co. has brought out its three-wheeled Motorette as package carrier. This is called the model N and is built on a chassis similar in general design to the other models. A single seat for the driver is placed over the single rear wheel which is driven by a chain from the horizontal motor in the middle of the car. Steering is done by a tiller which operates the two front wheels. The package carrier has a capacity of 28 cubic feet and is designed to carry 500 pounds. The frame is dropped in front to increase the carrying capacity of the package box.

WILMINGTON IN LINE

Motor patrol wagons probably will be adopted by the police department of Wilmington, Del., replacing the horse-drawn vehicles now in use. The police commissioners and members of the city council have been in conference during the past few days relative to making such a change, and the council, which furnishes the money, probably will sanction such a purchase during the next fiscal year, which begins July 1. Two other city departments—water and street and sewer—now use motor cars and they have proved satisfactory and facilitate the work of each department.

BUSES FOR DORCHESTER

Residents of Dorchester, a suburb of Boston, are so incensed at the lack of

street railway facilities going to and from their section of the city that they are planning now to put in operation a line of motor buses to run back and forth morning and evening as an experiment. The Dorchester Brokers' Association, which has the matter in hand, is considering the advisability of running the motor vehicles so that residents will either be allowed to ride free or for a fare less than the street railway charges, and in that way force the street railway officials to give the Dorchester people better service. The steam railroad, too, has been giving poor service of late.

PARADE IN BOSTON

While the annual parade of workhorses was being held in Boston last week an equally impressive parade was also held in which sixty electrically-propelled trucks and delivery wagons took part. It was

started in the morning, and with Day Baker, who handles the General Vehicle line in Boston, leading the van with Miss Virginia E. Aiken the vehicles motored about the different sections of the city.

TRUCKS FOR FREIGHTING

One feature of activity in central Oregon is the general use that is being made of heavy motor trucks for freighting. A truck carrying 4 tons of freight can make 60 miles a day and can go four times as far as teams in the same length of time. There are numerous trucks operating now between Opal City and LaPine, Ore., and other new districts. This modern means of freighting in central Oregon is in marked contrast with the eight and ten-horse outfits which until recently were used extensively for heavy hauling in the interior.

THREE-WHEELED TAXICAB

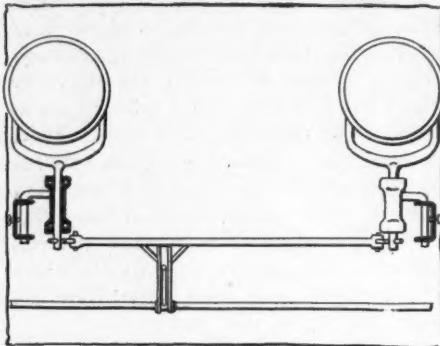
One of the novelties of the season in the way of public cabs is the Wagenhals motor hansom made by the Wagenhals Commercial Motor Car Co. of Detroit. The distinguishing feature of this cab is the fact that it has only three wheels, two in front and one in the rear. Owing to the location of the power plant under the seat, it was impossible to provide for entrance on the side and arrangements were made for entering the cab from the front. The lower door is carried on a rolling platform which opens to a vertical position as shown in the illustration.

The motor is of the two-cylinder opposed type with 5½-inch bore and 4-inch stroke. It is hinged at its forward end and spring suspended in the rear. The single rear wheel is driven by a chain and of course no differential is needed. It is said that the simplification of the rear axle has permitted the use of ninety fewer parts than is possible in the usual four-wheeled car.



WAGENHALS, A THREE-WHEELER MADE IN DETROIT

Current Motor Car Patents



WOGENSTAHL CONTROLLABLE HEADLAMPS

AUSTIN Dirigible Headlight—No. 992,142, dated May 16; to William B. Austin, Wilmington, Del.—This patent relates to a hand-controlled device illustrated herewith, which regulates or changes the direction of the headlamps of a motor car. It comprises a bracket adapted to be secured to the motor car frame, a lamp support mounted therein to rotate upon a vertical axis, a second bracket adapted to be secured to the motor car frame adjacent the driver's seat, a quadrant on this bracket comprising a pair of parallel members, and a lever pivotally mounted on it and projecting upwardly between the parallel members, a lug on side of the lever, one member of the quadrant being notched at substantially the center to receive the lug, a spring on the opposite side of the lever constantly engaging the other member of the quadrant, and a rod connecting the lever and the lamp support.

Arnold Priming Device—No. 992,327, dated May 16; to Charles E. Arnold, Indianapolis, Ind.—As shown in an accompanying illustration, the device covered by this patent is a means for priming gasoline engines of the multi-cylinder type, such as are used in motor cars, either from the front end of the car or from the dash. The device is a combination with a gasoline engine cylinder, of a conduit for supplying gasoline thereto for priming, a rotary valve in the conduit provided with ports at intervals, and means for giving

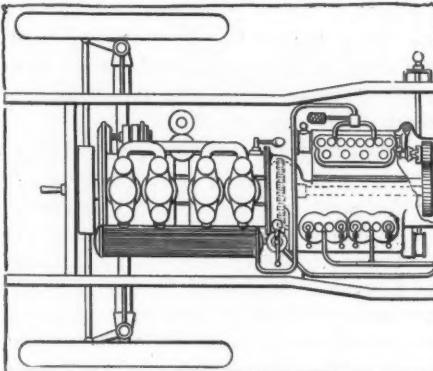
the valve a partial rotation at each operation thereof, whereby the valve will close the conduit at the beginning and ending of each operation and will open the valve during the operation.

Wogenstahl Controllable Headlamps—No. 991,587, dated May 9; to Leo J. Wogenstahl, San Antonio, Tex.—This patent covers a combination with a vehicle frame, of angle members consisting of upright portions journaled in the frame and horizontal portions protruding toward the longitudinal center of the frame; adjustable clamping devices in the frame engaging the upright portions of the angle members to hold them against rotation; upright heads upon the inner ends of the horizontal portions of the angle members; lamp carrying standards rotatable in the heads; arms inserted through the standards and slidable longitudinally therein; adjustable clamping devices mounted in the standards and adapted to bear against the arms to hold them against sliding movement; a rod pivoted adjacent its ends to arms; spaced, upright elements depending from the rod; and a finger having its ends disposed in different horizontal planes, one end of the finger being vertically slidable between the upright elements, and the other end of the finger being provided with means to engage the transverse steering rod of a vehicle.

Hautier Self-Propelled Vehicle—No. 992,661, dated May 16; to Camille Jean Hautier, Boulogne, France—This patent applies to a means of using compressed air to transmit power from the gasoline motor of the ordinary motor car to the driving mechanism. As illustrated, it is the combination of a motor mechanism composed of an engine, an epicyclic train of gears driven thereby, and including an

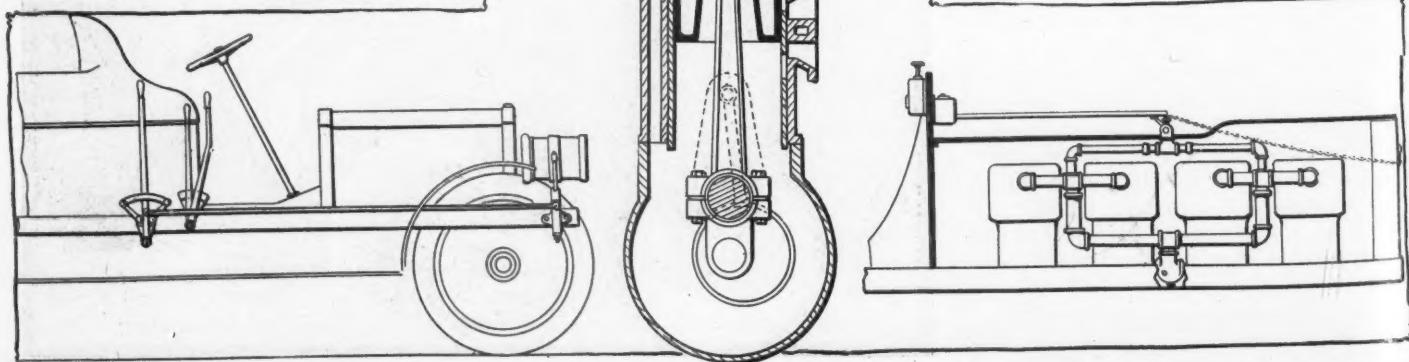
externally-toothed crown wheel, a propeller shaft driven by the train of gears, an air compressor driven by the externally-toothed crown wheel, a compressed air motor actuated from the compressor, gearing between the compressed air motor and the propeller shaft, and a coupling adapted to connect the compressed air motor with the gearing in such a manner that the propeller shaft is driven in the direction of forward is driven by the compressed air motor.

Coffin Slide-Valve Motor—No. 992,482, dated May 16; to Howard E. Coffin, Detroit, Mich.—This patent relates to a two-cycle slide-valve internal-combustion motor the design of which is shown in an accompanying illustration. The motor has a water-cooled cylinder with a detachable head, a piston in the cylinder, a port having a recess in one side thereof above the highest point of travel of the piston, an electric igniter positioned within the recess, and a cylindrical sleeve between the



HAUTIER COMPRESSED AIR VEHICLE

piston and cylinder forming a valve for controlling the port and being provided with an extension serving as a shield for covering the recess subsequent to the explosion. There also are ports in the sleeve which are designed to control the opening and closing of the exhaust port, which is so located in the cylinder as to be opened by the piston and sleeve as the piston nears the crank or lower end of its stroke, also the port below the exhaust port which admits the fuel-mixture into the crankcase.



AUSTIN DIRIGIBLE HEADLIGHT

COFFIN SLIDE-VALVE MOTOR

ARNOLD PRIMING DEVICE



The Motor Car Repair Shop

Handy Motor Stand

EFFICIENCY, it is a wonderful word. It is defined as the ratio of useful work to energy expended. In mechanics, when it is possible to perform a certain amount of useful work in less time than was previously required to do it, or with less energy expended and without reducing the quality of the workmanship, an increase of efficiency has been obtained.

In the accompanying illustrations is shown the type of motor stand employed in the repair and assembling departments of the Corbin factory. It is made almost entirely of cast iron, and is not only of substantial construction, but so designed that the motor can be arranged in practically any position that will add to the convenience of the workmen. The side-members M of the frame that supports the motor are secured at the front to a large cast-iron ring G, which is supported on rollers R. At their rear ends these side-members are attached to a heavy cross-member, which is pivoted at its center to the rear upright of the base; a means is provided for securing this pivoted cross-member in any position of the circle in which it operates, and the front end of the stand is such that convenient access to the engine gears at the front end of the motor is obtainable.

Weak Batteries, Hard Starting

In motor cars having a dual ignition system one should be careful not to let the batteries run down, otherwise much trouble may be experienced in getting the motor started. Dry cells generally are used to facilitate starting the motor in dual ignition systems, and it should be borne in mind that dry cells have recuperative powers. A few days ago an experienced

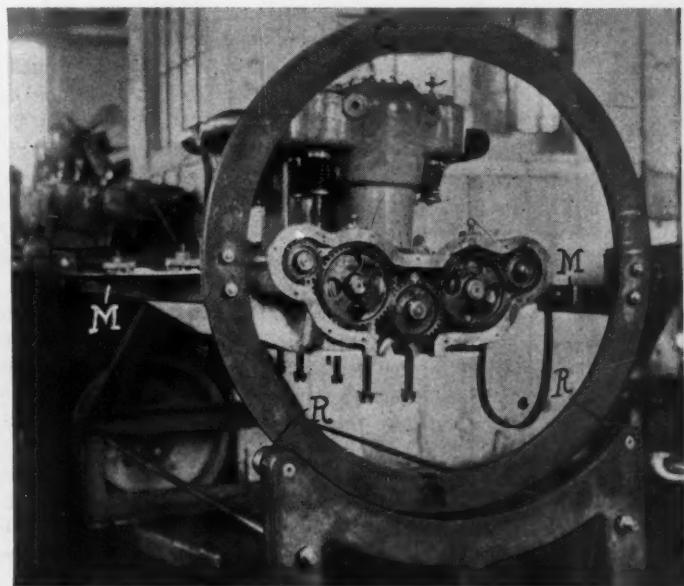
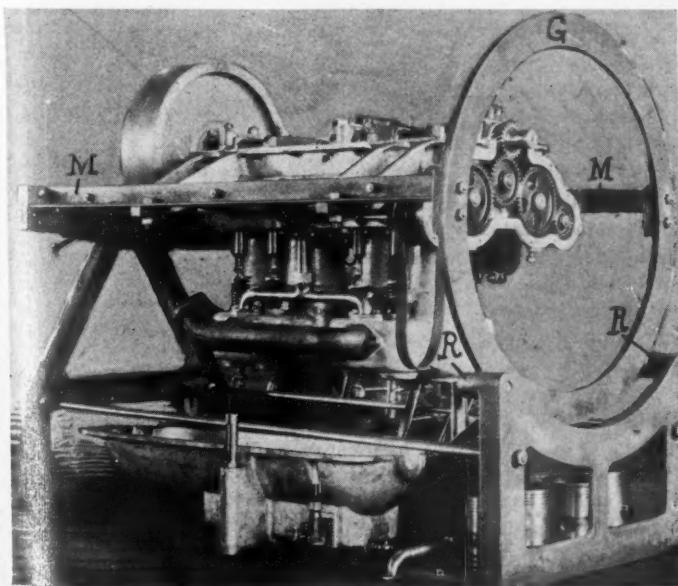
motorist had occasion to drive a car having a dual ignition system comprising a set of very weak cells, a low-tension magneto and a non-vibrating coil. It had been impossible to start the motor cold on the cells, so a storage battery had to be used to get the motor going. After the motor had been thoroughly warmed up, however, it was stopped, the dry-cells replaced, and the motor started twice with them. After driving the car on the road for half an hour the motor was accidentally stalled, but started again on the cells after spinning the motor as rapidly as possible with the starting crank. Before being switched over to the magneto, however, the motor had run for a number of seconds, during which time much of the little energy left in the cells was exhausted; so that when the motor was stalled again in a minute or two later no end of cranking or spinning could restart it.

A wait of 15 minutes permitted the cells to recuperate sufficiently to get a few feeble explosions out of the motor, but that was all; and not wishing to wait longer a passing motor car was hailed, a rope gotten out, the disabled car taken in tow, the clutch held out, the gears of low speed put into mesh, the ignition switch lever swung over to the magneto side; then, when the car had gained sufficient headway, the clutch was let in slowly and the motor was started.

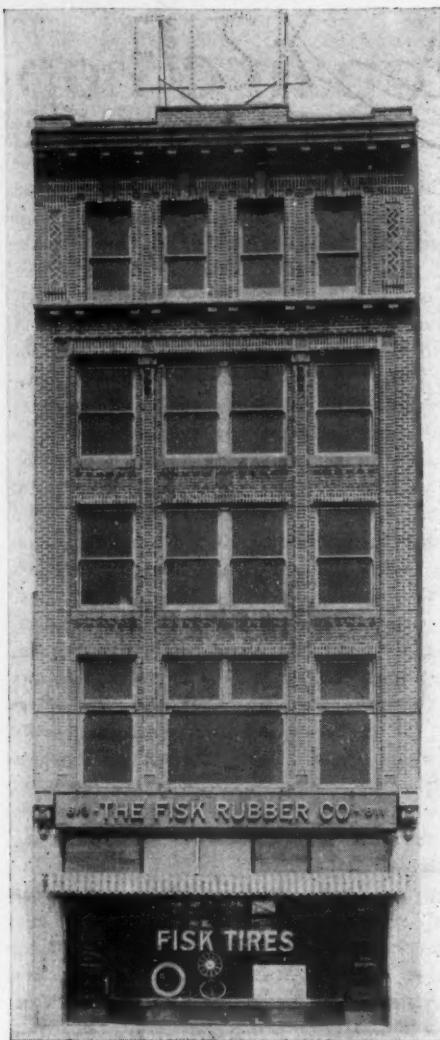
Motor Timing

The new motorist often finds it difficult to understand the action of the valves of a motor, the timing of the explosions and the relation between the occurrence of the ignition spark and valve operation to the movements of the pistons in the cylinders.

The difficulty is largely an imaginary one. In a four-cycle motor, for instance, it is very easy to remember that four strokes of the piston are necessary for each explosion. These are the intake, compression, explosion and exhaust strokes. In order that the gas may be taken into the cylinder the intake valve must open at the beginning of the suction or intake stroke; therefore one can readily learn when a piston is beginning its intake stroke by watching for the opening of the inlet valve. In a similar manner one can learn from the exhaust valves when the piston is on its exhaust stroke, for the exhaust valve opens just before the piston begins to ascend or approach the head end of the cylinder, to force the exhaust gases out. In multi-cylinder engines, engines with more than one cylinder, the order in which the cylinders fire can be easily learned by watching the order in which either the inlet or exhaust valves operate; and knowing the order in which the cylinders fire, by means of the following simple rule, the firing center of any cylinder on almost any four-cycle motor can be learned. When an exhaust valve opens, the following cylinder is about to fire; when an inlet valve begins to open, the previous cylinder is on its firing center. For example, if a four-cylinder motor fires 1-3-4-2, and the exhaust valve of No. 1 cylinder is opening, then No. 3 cylinder is about to fire; if No. 3 exhaust valve is opening, then No. 4 cylinder is on its firing center, etc. On the other hand, if the inlet valve of No. 1 cylinder is beginning to open, No. 2 cylinder is on its firing center; and if No. 3 inlet valve is beginning to open, No. 1 cylinder is on its firing center. One should watch the valves.



INVERTED AND UPRIGHT POSITIONS OF MOTOR ON ADJUSTABLE STAND EMPLOYED IN THE CORBIN PLANT



NEW FISK BRANCH IN BOSTON

PARIS Branch for Splitdorf—C. F. Splitdorf has decided to open a branch factory in Paris.

Kenmore Secures New Plant—The Kenmore Mfg. Co., of Chicago, has moved from South Sangamon street and Fourteenth place to the southeast corner of Carroll avenue and Ada street, where it will occupy the entire building fronting 100 feet on Carroll avenue, and extending 144 feet to the alley in the rear. The new quarters have more than twice the floor space of the old factory and are especially well adapted for the manufacture of motor cars.

New Fisk Tire Building—A five-story building at 811-813 Boylston street, Boston, now is Fisk headquarters in the Hub. It is five stories high, with a frontage of 30 feet and a depth of 100 feet. The front is of pressed brick with terra cotta trimmings. The first floor is used for the general salesroom and the executive offices. The basement is devoted entirely to the shipping and receiving departments. It extends the full depth of the building, and racks are provided for 4,000 tires. The top floor is exclusively for the repair department. There are windows in both the back and front, and two sky-lights which furnish excellent light. The general

Among the Makers

offices and salesroom are finished in quartered white oak, seasoned, planed and smoothed. Freight and passenger elevators connect all departments.

Indiana Regulation—Lew Ellingham, Indiana secretary of state, reports there were 2,435 motor registrations during May, and a total of 4,035 during the months of April and May. The figures for May show a gain of 595 over May, 1910.

New Marmon Publicity Man—The Nordyke & Marmon Co., Indianapolis, has appointed Paul Richey to take charge of its publicity department. Mr. Richey has been with an advertising agency and prior to that was with the advertising department of the Indianapolis Star.

Firestone Picnic Planned—The annual outing of the Firestone Tire and Rubber Co., of Akron, Ohio, will be held June 24 at Cedar Point, Ohio. It has been the custom of the company to give its employes an outing each year. Special trains will take the employes and their families to Cedar Point.

New Plant at Warren—The Ohio Universal Motor Co., which is arranging to build a large plant at Warren, Ohio, for the manufacture of motor trucks, has secured a site on the west side between the B. & O. and Erie railroads and has leased offices in the Western Reserve National Bank building in that city.

New Rambler Move—The Chicago retail branch of the Thomas B. Jeffery Co. was this week moved from 1462 South Michigan avenue to 1008 on the same street, where more room can be had. The old place will be retained as a service building until May 1, 1912, at which time the Rambler people hope to have built a four-story 100 by 160 structure which will be used as a service building. The store at 1008 South Michigan avenue will be the main retail salesroom.

Merger at Lansing—The Ideal Gas Engine Co., of Lansing, Mich., capitalized at \$150,000, paid in, has taken over the Ideal Motor Co., and the Air-Cooled Motor Co. and will greatly extend and increase the business and the plants of both in combining them. Articles of incorporation have been filed. A short time ago the announcement was made that the Air-Cooled Motor Co. had been reorganized and that articles of incorporation would soon be filed. Before that was done, however, those interested in the reorganization decided to include the Ideal Motor Co. Officers of the Ideal Gas Engine Co. have been elected as follows: President, R. E. Olds; vice-president, E. F. Cooley; treasurer and manager, Wells G. Brown; secretary, James H. Thompson; sales manager, Charles H. Smith. Temporarily the business of the two plants will be continued

in the quarters of the Clark Power Wagon Co. and the Michigan Screw Co. As soon as a site can be secured, however, a large plant will be built and put into immediate operation.

Warner Opens Detroit Office—The Warner Gear Co., of Muncie, Ind., has opened a Detroit office at 628 Ford building, with Edwin B. Baltzly in charge. This office will take care of the sales of Michigan and Ohio territory.

Sherman Joins Mercury Forces—George E. Sherman, who has been associated with the Studebaker organization in Chicago, in both the wholesale and retail motor car departments, has been elected general sales manager of the Mercury Mfg. Co., 4110 South Halsted street, Chicago, manufacturer of commercial wagons.

Accident in Indianapolis—A steel tank weighing nearly 3 tons fell from the roof of a new building under construction through the roof and floors of the Hearsey-Willis Co., Indianapolis, on June 2. Motor car accessories and three new motor cars were wrecked at a total damage of about \$10,000. Fortunately none was injured.

Kopmeier Remembers Orphans—The Kopmeier Motor Car Co. of Milwaukee, representing the Chalmers and Detroit electric cars, was host to fifty Milwaukee orphans from the St. Amelius asylum last week. The party visited all the parks and Whitefish Bay, where a luncheon was provided. The party was in charge of Waldemar S. Kopmeier and Albert F. Timme, general manager.

Deere Controls Midland Company—Deere & Co., the plow manufacturing company which recently effected a merger with twenty-two allied concerns and increased its capitalization to \$65,000,000, has secured a controlling interest in the Midland Motor Co. through the resignation of S. H. Pope, former president and general manager. It is understood that the Midland plant will be completely organized and that expansion will follow shortly.

Jaunt for the Hoosiers—About 200 Indianapolis manufacturers, wholesalers and jobbers of the city, including representatives of most of the local motor car concerns, will make a trade extension trip through southern Indiana June 19, 20 and 21. A special train of eight cars has been engaged for the trip. On the first day, business men of Paragon, Gosport, Spencer, Worthington, Switz City, Lyons, Sandborn, Edwardsport, Bicknell and Vincennes will be visited, the night being spent in Vincennes, where business men are arranging an elaborate entertainment. The second day will include stops at Oaktown, Carlisle, Hazleton, Patoka, Princeton, Fort Branch, Haubstadt, Owensville, Cynthiana, Poseyville, Wadesville, Mt. Ver-

and Dealers

non and Evansville, the night to be spent in the latter city. On the last day Elberfeld, Oakland City, Petersburg, Washington, Plainville, Elnora, Linton and Bloomfield will be visited.

Rubber Company Reorganized—A merger of the Alkali Rubber Co. of Akron, Ohio, and the Philadelphia Rubber Works of Philadelphia, Pa., has been completed under the name of the Philadelphia Rubber Works Co. The capitalization of the merger is \$2,500,000 and the officers are: J. K. Mitchell, Philadelphia, president; J. S. Lowman, Akron, vice-president; E. M. Mundy, Philadelphia, treasurer, and F. M. Schwab, Philadelphia, secretary. Plants will be operated in both Akron and Philadelphia.

Bus Service for Indianapolis—On July 15 a motor car omnibus service will be started in Indianapolis by the Rapid Transit Motor Co., articles of incorporation for which have been filed with the Indiana secretary of state, showing an authorized capitalization of \$150,000. It is stated the new service will be installed because of the condition of local street car service, which is usually regarded as inadequate. Cars are overcrowded and the public seemingly has been unable to have any control over the situation. Officers of the company have been elected as follows: President, James T. Eaglesfield; vice-presi-

dent, Dr. Hugo Pantzer; secretary, Bert A. Boyd; treasurer, Joseph W. Selvage; directors, the officers and W. D. Allison, H. B. Burnet and R. D. Campbell.

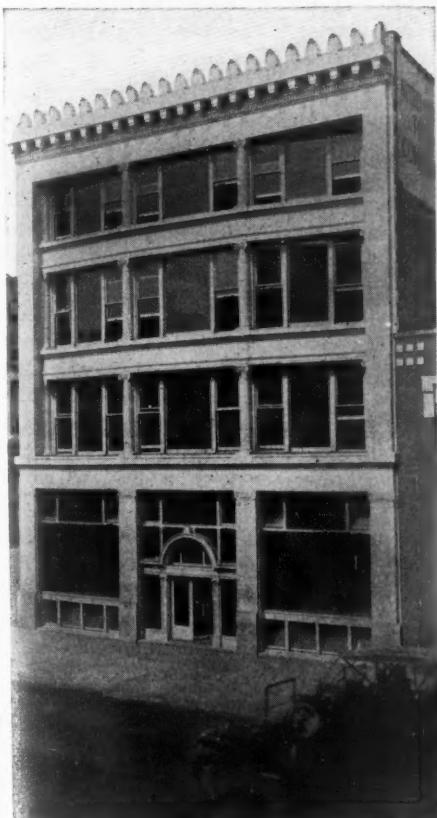
Labor in Demand—Labor agents from Detroit and other Michigan cities are overrunning Racine, Wis., in an effort to induce local labor to leave the motor car and parts plant and enter the employ of the Wolverine factories. Skilled labor is held at premium. Few mechanics have accepted the offers of the agents, preferring to remain in Racine, where there is steady employment 12 months in the year.

Plan Long Bus Line—Organization of a company to operate motor cars between Shelbyville and Edinburg, via Nineveh, has been completed, and the line will be the longest of its kind in Indiana. Officers of the company have been elected as follows: President, John A. Thompson, Edinburg; vice-president, Will Dorsey, Shelbyville; secretary, Louis Winterberg, Mt. Auburn; treasurer, R. G. Porter, Edinburg, and manager, C. M. Shepherd, Edinburg.

Awards Mail Contract—Robert H. Bryson, postmaster at Indianapolis, has awarded a contract to S. R. Hoffman, representing the Denver Rapid Transit Co., Denver, Col., for collecting mail in Indianapolis for the 4 years beginning July 1. Hoffman submitted the only bid, asking \$2,750 a year for each of three machines and drivers. He also is to keep one motor car in reserve for emergencies. The present contract is held by the Willys-Overland Co., who did not bid for the new contract.

Street No Garage—The municipal affairs committee of the chamber of commerce of Syracuse, N. Y., has complained to Commissioner of Public Safety H. E. Hessler about the storing of motor cars in the streets in the vicinity of garages. Resolutions protesting against this practice by many dealers were submitted to the board of directors at a meeting of the chamber last week. It is stated that the department of public safety will adopt stringent measures against making parking places of the public thoroughfares.

New Gasoline Ordinance—The ordinance passed by the city council of Columbus, Ohio, providing for the storage of gasoline, became effective June 1, and hereafter the fire department will have authority to see that all gasoline stored within the city limits is in accordance with the new ordinance. The new law prohibits the storing of more than 5 gallons of gasoline in a residence building used for other purposes. Quantities of 20 gallons or more must be kept in a separate house under special conditions, to be approved by the



NEW BUILDING OF UNITED STATES TIRE CO. IN CHICAGO



BUGGYAUT USED TO HOIST MERCHANDISE

chief of the fire department. The new ordinance necessitated a change in the method of storage by a number of Columbus garages.

Buys Gyrex Rights—The Royal Equipment Co., manufacturer of Raybestos and Duplex brakes, has purchased the rights to manufacture and sell the Gyrex from the Gyrex Mfg. Co. of New York.

Canis in Charge—The business of the R. E. Hardy Co., of Chicago, maker of ignition specialties, whose president, R. E. Hardy, died recently, will be continued as heretofore, under the management of W. B. Canis, treasurer.

Case Agents Visit Factory—The J. I. Case Threshing Machine Co., of Racine, Wis., entertained forty-eight general agents at the various Case factories in Racine last week. All of the general agents are now active in the selling of Case cars, formerly the Pierce-Racine, and spent some time in the inspection of the Case motor car works. A feature of the convention was a motoring tour for which thirty-two Case cars of identical design were required. The tour ended with a banquet at the Racine Country Club.

Another Klaxon Suit—Suit has been brought in the United States circuit court at Indianapolis by the Lovell-McConnell Mfg. Co. of New Jersey, against George F. Kreitlein, seeking to enjoin Kreitlein from selling patented motor car horns below a licensed price, and asking an accounting. Kreitlein conducts a motor car accessory and sundry business under the name of the Guarantee Tire and Rubber Co. and was recently made defendant in a similar suit brought by a tire company. It is charged that Kreitlein has been cutting prices.



Brief Business Announcements



WALLACE, IDAHO—The Wallace Motor Co. has opened here, with Charles Barrett as manager.

Kansas City, Mo.—The Cline Auto Co. has moved its show rooms to 606 East Fifteenth street.

Chicago—The Universal Motor Truck Co. has closed a contract with the McDuffee Automobile Co. for the sale of Universal trucks in Chicago.

Baltimore, Md.—A sub-agency for the Baltimore branch of the Stoddard-Dayton was closed in Richmond, Va., by G. G. Norwood during a visit there the past week.

Youngstown, O.—The Auto Garage Co. of Youngstown was incorporated for \$20,000. The incorporators are John W. Kuhns, Henry J. Kuhns, Emery G. Crick, Frank O. Whiteside, and others.

Greenville, Pa.—Walter Bortz and H. H. Schultz have bought the Reed garage of this town and will add a large machine shop to its general business. The plant is being equipped with entirely new machinery.

Ionia, Mich.—Negotiations are under way here for the sale of the large garage of C. Chamberlain to Frank Van Vleck, of Palo, Mich. Mr. Chamberlain will take charge of the Acme Tire Co., a concern recently formed in this city.

Kansas City, Mo.—The Kansas City Transportation and Commercial Car Co. has been incorporated and will handle the Adams line of trucks, manufactured by the Adams Brothers Co., of Findlay, O. Offices have been opened at Eleventh and Locust streets.

Toledo, O.—The Lloyds Real Estate Co. was incorporated at Toledo this week with a capital stock of \$10,000 by J. C. Lockwood and others. The new company will erect a modern garage for the Roberts-Toledo Automobile Co. on a site at the corner of Madison avenue and Eleventh street.

Milwaukee, Wis.—The Stephenson Motor Truck Co., formerly the Stephenson Motor Car Co., which manufactures motor trucks at South Milwaukee, has opened a Milwaukee office and salesroom on the seventh floor of the Pabst building, Wisconsin and East Water streets. The company builds the Utility line of trucks.

Pittsburg, Pa.—At the annual meeting of the stockholders of the Excelsior Express and Standard Cab Co. the following officers and directors were elected: Richard Floyd, president; James D. Callery, vice-president; Joseph Ford, secretary-treasurer and general manager; Joseph A. Reinhart, assistant secretary and treasurer; O. A. Blackburn, John Wilson Tay-

lor, M. K. McMullin, James D. Callery and Richard Floyd, directors. Mr. Floyd was selected to succeed William H. Keech.

Boston, Mass.—The American Simplex Co. has taken on the Metz car, having the entire New England territory for it.

Fendleton, Ore.—The Pendleton Automobile Co., agent for the Franklin cars, has also taken on the agency for the Reo.

Donora, Pa.—Ross Ridgely and Frank Maton have bought the garage business of the Donora Auto Co. at Donora. The new firm will add a repair shop.

Columbus, O.—Engle & Vincent, who operate a garage at 122 Parsons avenue, have taken the central Ohio agency for the Paterson and Locomobile.

Akron, O.—The capital stock of the Alkali Rubber Co. has been reduced from \$1,000,000 to \$10,000. B. G. Work is president and J. S. Cowmans, secretary, of the company.

Boston, Mass.—Frederick K. Leatherbee has purchased an interest in the White-Ware Co., agent for the Bergdoll cars, and the firm name has been changed to White, Ware & Leatherbee.

Milwaukee, Wis.—T. S. Hartridge, 3431 Sycamore street, has been appointed agent for the Havers six. The cars are on exhibition at the Gilmore garage, Twelfth street, just north of Grand avenue, in Milwaukee.

Philadelphia, Pa.—A direct factory branch of the Thomas B. Jeffrey Co., manufacturer of the Rambler, has been established at the southeast corner of Broad and Race streets. Frederick E. Devlin heads the new branch.

Waterville, O.—The Waterville Traction Co., which has been engaged in the manufacture of gasoline-driven motor trucks, has increased its capital stock from \$50,000 to \$150,000. The company will branch out and put on the market tractors for farm use and heavy trucking.

Dayton, O.—The Dayton Automobile Co. has been incorporated with a capital of \$30,000 to manufacture, sell, repair and hire motor cars of all kinds and to deal in accessories and supplies. The incorporators are J. N. Agentroad, C. N. Hunter, A. S. Iddings, D. W. Iddings and J. E. Studybaker.

Cleveland, O.—The Citizens' Taxicab Co. has been reorganized with a capital of \$131,000. The officers are: A. W. Ellenberger, president; R. A. Wilbur, vice-president; L. S. Sheets, treasurer, and S. S. Olds, secretary and manager. The company has purchased a new site in East One Hundred and Seventh street, near Euclid avenue. A branch will

shortly be opened to take care of all business east of East Fifty-fifth street. Stearns cars will be used in the service.

Springfield, Mass.—E. R. Laduke has opened a motor car exchange in the J. R. Smith building.

Baltimore, Md.—The Lozier Sales Co. has opened up its new showrooms, just completed, at Maryland and North avenues.

Boston, Mass.—E. P. Blake, who handles the Abbott-Detroit and the McIntyre truck, also has taken on the Clark car for New England.

Columbus, O.—Kimmell Brothers, central Ohio agents for the Speedwell and Badger, also have taken over the agency for the Auglaize truck, manufactured at New Bremen, Ohio.

Toledo, O.—The Toledo Tire and Repair Co., 241-3 Erie street, has secured the general distributing agency for the complete line of Firestone pneumatic, motor truck and carriage tires and rims.

Columbus, O.—The Rusk & Hallock Automobile Co., formerly the De Tamble Auto Sales Co., has moved into new quarters at 244 North Fourth street. The firm has the central Ohio agency for the Clark and De Tamble.

Cleveland, O.—The Cleveland Auto Starter Co. has been incorporated with a capital of \$25,000 to manufacture a patented starter. The incorporators are E. A. Curtis, J. H. Cousins, R. F. Cragin, V. M. Soika and Margaret R. Moffat.

Boston, Mass.—The Universal Motor Truck Co. announces the appointment of W. L. Wilcox, of Boston, eastern New England dealer for the Universal truck. Mr. Wilcox's headquarters are on Boylston street, Boston, although he operates a branch place at Providence.

Oklahoma City, Okla.—The Wood-Knight-Hawk Mfg. Co. has recently been incorporated for \$200,000, and which includes the plant and equipment of the Pioneer Car Mfg. Co. The new company will continue building the Pioneer pleasure car, together with a line of motor plows and motor trucks.

New York—The Pneumatic Suspension Wheel Co., capital \$250,000, has been incorporated to manufacture wheels under basic patents of recent issue. Incorporators are Henry H. Melville and Charles W. Miller, of New York, and F. N. Morley, of Boston. The board of directors is composed of John Joyce, Boston; H. H. Melville, James G. Batterson, John Stanton and Charles W. Miller, all of New York; F. N. Morley, Boston, and John J. Roche, of Stamford, Conn. The company has a large plant at Stamford, Conn.

which is said to be ready to negotiate contracts for the making of wheels and tires.

Tacoma, Wash.—Homer King has recently taken the agency for the Everitt car in this city.

Baltimore, Md.—The Republic Tire Co. has established an agency in Baltimore with the Southern Auto and Supply Co., 23 and 25 Light street.

Cleveland, O.—The Westman Motor Truck Co. has bought the Horton plant at Painesville, O., and will manufacture its products there in the future.

Spokane, Wash.—The Standard Motor Car Co., of Spokane, has closed a contract with Edward Noble to take the management of the company in Spokane.

Seattle, Wash.—J. E. Morgan, a Harvard and Georgetown collegian, has entered the Seattle field and has established the Morgan Auto Supply Co., at Fourth avenue and Westlake.

Portland, Ore.—R. H. Thompson, of Portland, has recently purchased a site at Fourteenth and Couch streets on which he will erect a three-story garage for the Speedwell Auto Co., of Portland.

Seattle, Wash.—A. C. Stevens, formerly with the Stearns Motor Co., Seattle, as manager for Emmet Harris, has taken over the representation of the Stearns car and has a new location at 1409 Broadway.

Racine, Wis.—The Mitchell-Lewis Motor Co. has established a branch at Dallas, Tex., to take care of the southwestern Mitchell trade. A large warehouse is being erected at Dallas and will be in charge of Frank Rohan.

Boston, Mass.—The George H. Proctor Supply Co. has moved into its new building at 1008 Commonwealth avenue, built expressly for it, giving the firm adequate facilities for marketing the Pullman and Stanley cars, as well as handling the big supply business.

Brooklyn, N. Y.—A. R. Tater, of the Empire City Automobile Co., representing the Paige-Detroit and Colby cars in this territory, announces the opening of a new branch salesroom in the Tollner block, 1173 Bedford avenue. The new salesroom will be in charge of Walter D. Tyler.

Boston, Mass.—A. H. Sowers, formerly with the Studebaker branch in Boston, has resigned and accepted a position with the New England branch of the Welch. He is second Studebaker man to go with the Welch within a few weeks, the other being George Veasey, formerly Boston manager of the company.

Oklahoma City, Okla.—J. B. Barrett, of Buffalo, N. Y., is in Oklahoma City for the purpose of establishing an agency for the Pierce-Arrow. The Oklahoma Motor Car Co. has maintained an agency for this car in the past, in conjunction with other kinds, but in the future it is announced that Mr. Barrett will assume charge of

the exclusive agency, using Oklahoma City as the distributing point for the state of Oklahoma.

St. Louis, Mo.—The Jacobson-Koch Co. has taken the agency for St. Louis of the Pratt-Elkhart car.

Marinette, Wis.—The Twin City Auto Co. is representing the Ford and expects to take on additional lines as soon as its new garage on Hall avenue is finished.

Racine, Wis.—The Success Plumbing Co. is building a public garage adjoining its establishment on State street. It will be of brick construction, of liberal dimensions and one story high.

Boston, Mass.—The Firestone Tire and Rubber Co. has purchased a large lot of land at the junction of Commonwealth avenue and Beacon street, where it proposes to erect a large building devoted exclusively to its products.

Erie, Pa.—The Lawrence Hotel Co. has been chartered by Delos M. and Tom W. Johnson, Frederick W. Rockwell, Frederick W. Rockwell, Frank L. Dudley and Harry L. Moore, of that city. It will establish a garage and taxicab service at once.

Milwaukee, Wis.—The Vilter Mfg. Co., one of the largest producers of ice and refrigerating machinery and Corliss engines in the middle west, has established a motor car repair department, following the success of its welding department, which pays especial attention to motor car work.

Newark, N. J.—The Glenwood Garage Co. has filed articles of incorporation, with a capital of \$125,000. It is the purpose to run an establishment at 342 Sixth avenue. Herbert L. Green, at that address, is the statutory agent. He and two others are the incorporators—Warren F. Greene and Casper F. Greene.

Pittsburg, Pa.—A new company which has lately arranged to locate in the West End district of Pittsburg is the Eureka Steel Co., which will build a plant on McKnight and Lowe streets. The company has recently increased its capital from \$25,000 to \$250,000 and elected G. B. Smith president, and George D. Hutson,

secretary. It will make a specialty of manufacturing parts.

Somerset, Pa.—The Somerset Automobile Co. had added a big machine shop to its plant there.

Reynolds, Ill.—Emil Meurling has torn down his old repair shop and has placed a large new garage in its place, with a repair shop in connection.

Oshkosh, Wis.—The Warning Sheet Metal Co. has been incorporated at Oshkosh, with a capital stock of \$25,000. The incorporators are Charles F. Frieda and William Warning.

Seattle, Wash.—Dr. R. M. Andruss and E. E. Davis have taken the agency for the Overland car for Clark and Cowlitz counties, which are located just north of the Columbia river in the state of Washington.

Elizabeth, N. J.—The Prest-O-Lite Co. has purchased a tract of about 7 acres on Newark avenue, just this side of the city line, and has started operations preparatory to the erection of a manufacturing plant and charging station.

Portland, Ore.—J. H. Wilcox, for some months connected with the E-M-F Northwest Co. of Portland, has resigned and accepted the position of sales manager for the R. M. Wade Co., which recently established an agency in Portland for the Michigan.

Albany, N. Y.—The Eastern Motor Sales Co. has been incorporated with a capital of \$300,000. The directors are C. V. Collins, William H. Anderson and Charles P. Boland, of Troy; George D. Baker, of Englewood, N. J., and Herbert M. Caswell, of Malden-on-the-Hudson. The principal office will be Albany.

Springfield, Mass.—It is reported that the Brightwood Motor Co., organized by New York capitalists to supply themselves with specially-built motor cars, will be reorganized. The car turned out is known as the Orson, and it is believed the market for them can be enlarged. They have been sold to stockholders at cost.

Toledo, O.—The Toledo Tire and Repair Co. has been incorporated here with a capital of \$10,000. It will do a general transfer and garage business, handle motor supplies, and job and retail trucks. Its place of business will be on Erie street, near Madison avenue. The incorporators are David T. Davies, Jr., A. J. Gendron, H. C. Hassett, B. Groenwald, and D. J. Marleau.

Youngstown, O.—The Ideal Auto Top and Trimming Co. has been organized by A. W. Johnson, Jr., who represents the Hupmobile in this city, and F. J. Paddon, of Youngstown, and J. W. Fulford, of Cleveland. Mr. Paddon will be manager of the company, which will manufacture leather, mohair and pantasote tops and also slope linings, slope covers and glass fronts.

Recent Incorporations

New York—S. D. Mfg. Co., capital stock \$30,000; to manufacture motor cars, motor cycles, accessories, etc.; incorporators, J. R. Spangler, H. Spangler and O. G. DeWald.

Newark, N. J.—H. K. B. Mfg. Co., capital stock \$200,000; to manufacture and deal in automatic centrifugal journal oilers.

Portland, Me.—Mogul Motor Truck Co., capital stock \$200,000; to manufacture and deal in motor trucks, etc. Officers, C. E. Eaton and A. F. Jones.

San Antonio, Tex.—Northwestern Auto Supply Co., capital stock \$5,000; incorporators, O. A. Kentner, W. M. McGregor and J. C. Tandy.

San Antonio, Tex.—White Motor Car Co., capital stock \$25,000; incorporators, F. M. Etheridge, G. A. Urquhart and W. C. White.

Development Briefs

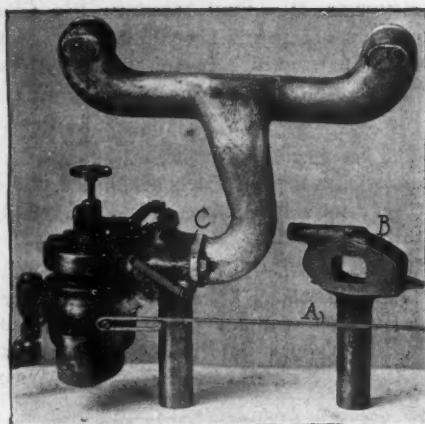


FIG. 1—HOFWEBER MOTOR STARTER

Neverout License Brackets

THE recent laws in many states requiring that the tail lamp and number plate be so arranged that light is thrown directly on the latter have resulted in the Rose Mfg. Co. of Philadelphia, bringing out a line of holders for the number plate. Three types of these are shown in Fig. 3, the upper illustration showing the method of attachment of the lamp and plate. The holder fits any standard lamp bracket and lamp and any size number plate can be attached. It holds the plate rigidly by metal clamps so that the latter cannot swing, and directs the light upon the plate.

Asbestos Innerlining

One of the recent developments in automobile tires is the use of a protective cover to be placed between the inner tube and the outer casing. In one make of protector this has taken the form of a strip of hide with asbestos fabric on each side. It is called asbestos leather innerlining and is manufactured by the Auto Tire Innerlining Co., Cincinnati, O. This lining is cemented to the outer casing, and the asbestos construction prevents the friction heat generated in the tire from being transmitted to the inner tube, prolonging

the life of the tires. In Fig. 4, A shows the application of the innerlining to the outer casing, while at B the outer casing is shown without the lining.

Hofweber Motor Starter

Another device for rendering the starting of motor cars easier, especially in cold weather, is made by the Motor Devices Mfg. Co., of La Crosse, Wis. This is designed in particular for the model T Ford and is to be placed between the carburetor and the intake manifold as indicated at C, Fig. 1. The mixer itself is shown at B and is so constructed that by pulling out the rod A which extends through the radiator, the regular carburetor is put out of commission. At the same time the Hofweber starter is automatically thrown in until the motor has taken up its regular cycle of operation, at

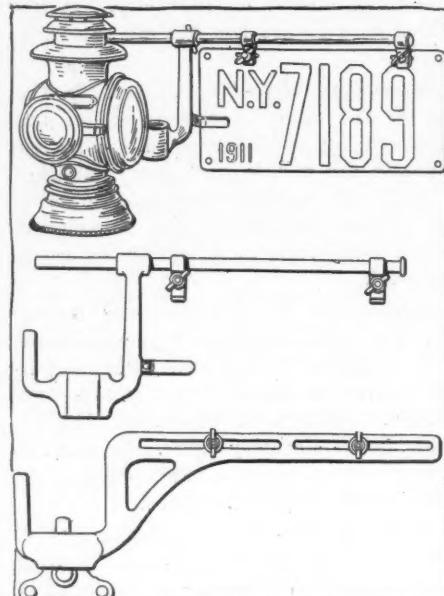


FIG. 3—NEVEROUT LICENSE BRACKETS

which time the starter is thrown out of service and the carburetor reinstated. The gasoline is supplied to the starter by means of a bypass which is connected to the regular supply pipe of the carburetor. The claim is made that with this attachment the motor can be started on the first turn of the crank in any weather and that it can be attached in 10 minutes.

Waterproof Tire Trunk

A case intended to provide storage space for small articles which may be needed on a trip and which is designed to be secured within the spare tire has been brought out by the Wohlfeld Trunk and Bag Co. of Philadelphia. The front of the trunk is divided into two sections, a permanent section and a sliding section pivoted at the center. This movable part rotates to a position behind the stationary portion and leaves about half of the side open. The

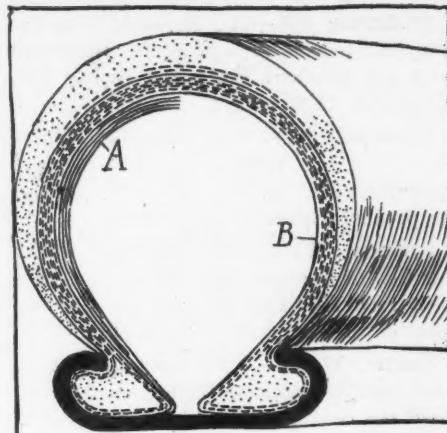


FIG. 4—ASBESTOS INNERLINING

trunk is made waterproof and dust-tight by means of an overlapping rim around the upper half of the circumference. Straps are provided for attaching the trunk to the tire or tire case. It is made of trunk board covered with enameled duck and is felt lined.

Another product of this firm is a lunch kit intended to be strapped on the running board. It consists of a case containing plates, cups and saucers, knives and forks and napkins for four people. There also is space for carrying two 1-quart vacuum bottles and food for four or more people.

Autopower Carbon-Remover

The Lakewood Chemical Co. of Cleveland, O., is marketing a carbon-remover in the form of a liquid to be poured into the cylinders and allowed to stand over night. The liquid is called Autopower Carbon Remover and it is said that the carbon deposit is decomposed and blown out in the form of a soft black paste which will not harm the valve seats. A further claim is made for this product that the surfaces of the valves and cylinders are left in an oily condition and it is not necessary to change the oil in the crankcase after blowing out the carbon.

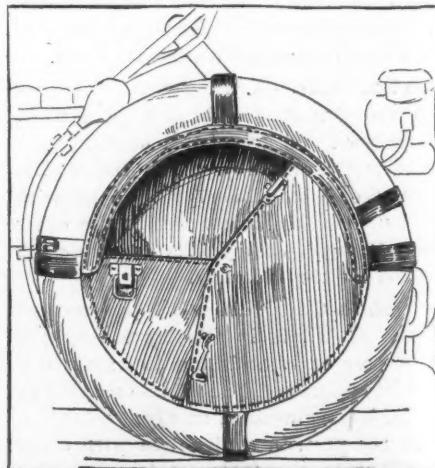


FIG. 5—WOHLFELD'S TIRE TRUNK

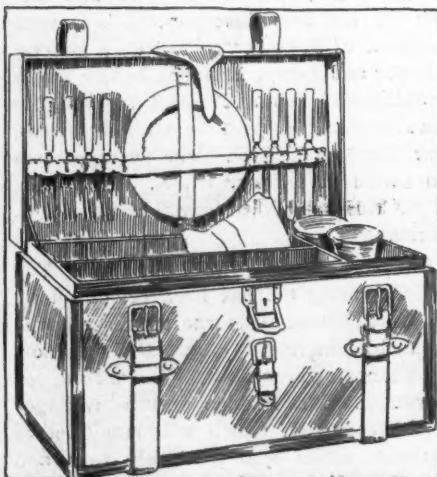


FIG. 2—WOHLFELD'S LUNCH KIT